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Cryptic diversity of South African trapdoor spiders: Three new species of *Stasimopus* Simon, 1892 (Mygalomorphae, Ctenizidae), and redescription of *Stasimopus robertsi* Hewitt, 1910

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ABSTRACT

Three new species of *Stasimopus* Simon, 1892, are described from the Gauteng and North West provinces of South Africa. They are readily distinguished from all other known *Stasimopus* species by the presence of spinules in the tarsal scutulae on the first two pairs of legs of adult males. The only described species recorded in the vicinity, *Stasimopus robertsi* Hewitt, 1910, which appears to be endemic to northern Gauteng Province, is redescribed. The four species are comprehensively illustrated, a key to identify the adult males from those of other new species in the region is provided, and their conservation status discussed. Available evidence suggests that many *Stasimopus* species remain to be discovered and described, but significant effort will be required to obtain adult males, considered important for accurate species delimitation in the genus.

KEYWORDS: Araneae, Ctenizidae, trapdoor spider, South Africa, taxonomy, conservation.

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INTRODUCTION

The trapdoor spider genus *Stasimopus* Simon, 1892, is a diverse and abundant component of the southern African mygalomorph spider fauna. Forty-five infrageneric taxa have been described to date, mostly from the Eastern Cape, Free State, Northern Cape, and Western Cape provinces of South Africa (table 1). The genus has also been recorded from Lesotho, and probably occurs more widely in southern Africa. *Stasimopus rufidens* (Ausserer, 1871) is the largest trapdoor spider species known from the region, with adult females reaching a total length of 50 mm.

Stasimopus occur in dense colonies in some habitats, and are often the most abundant species in mygalomorph spider communities (I. Engelbrecht, unpubl. data). These spiders live in self-constructed, vertical, tubular burrows with a thick, corklike lid (Dippenaar Schoeman, 2002; fig. 1E, F). When closed, the lid may be so well camouflaged against the surrounding substrate that it is impossible to detect. The spider will forcefully hold down the lid during attempts to open it, using the front legs and fangs, presumably as a defense against predators.

The genus *Stasimopus* is extremely conservative morphologically. Females and juveniles are stocky in appearance, with large bodies and short legs, adapted for spending their entire life within their tubular burrow (fig. 2A, D, F). On reaching sexual maturity, males become more gracile (fig. 2B, C, E), developing long, slender legs adapted for walking long distances in search of sexually receptive females. Morphological differences among *Stasimopus* species are often subtle, particularly in females (Hewitt, 1915a; Hendrixson and Bond, 2004). Species diagnosis is based primarily on ocular characters of both sexes, the presence and extent of patches of spinules on the dorsal surfaces of the pedipalps and first pair of legs in females, and the length of the pedipalps and spination of the first two pairs of legs in males.

Raven (1985) maintained the placement of *Stasimopus* in Ctenizidae Thorell, 1887, based on a phylogenetic analysis of morphological characters, according to which *Stasimopus* shares seven putative synapomorphies with other ctenizid genera. Hedin and Bond (2006) suggested the genus may be sister to the Migidae Simon, 1889, based on a phylogenetic analysis of nuclear DNA sequences, but left its taxonomic placement in Ctenizidae unchanged. The monophyly of *Stasimopus* remains untested.

The taxonomic history of *Stasimopus* is relatively brief. *Actinopus cafrus* C.L. Koch, 1842, was the first species to be described, followed by *Cyrtocarenum rufidens* Ausserer, 1871, and *Pachlylomerus natalensis* Cambridge, 1889. Simon (1892) created *Stasimopus* to accommodate *A. cafrus*. Pocock (1898) synonymized *P. natalensis* with *C. rufidens* and transferred it to *Stasimopus*. Most of the species were subsequently described by three authors. Hewitt (1910, 1913, 1914, 1915a, 1915b, 1916, 1917, 1919, 1927), Pocock (1897, 1900, 1901, 1902a, 1902b), and Purcell (1902, 1903a, 1903b, 1908) respectively described 35, 8, and 13 species. Almost 80 years later, Hendrixson and Bond (2004) described *Stasimopus mandelai* Hendrixson and Bond, 2004. No further work has been conducted since. The genus has never been revised.

The present contribution is part of a greater project to document the diversity, distribution and conservation status of mygalomorph spiders in Gauteng Province, South Africa. Trapdoor spiders were an important component of a spatial biodiversity conservation plan developed for

the province in 2001. This plan has been used as the primary decision support tool for environmental impact assessments during the past decade. It became apparent during the course of surveys conducted in the province and adjacent areas that trapdoor spider diversity was underestimated. Several new species were discovered in various genera, including *Stasimopus*. In the present contribution, three new species of *Stasimopus* are described and the only described species recorded in the vicinity, *Stasimopus robertsi* Hewitt, 1910, is redescribed. The four species are comprehensively illustrated, a key to identify the adult males from those of other new species in the region is provided, and their conservation status discussed. Available evidence suggests that many *Stasimopus* species remain to be discovered and described, but significant effort will be required to obtain adult males, considered important for accurate species delimitation in the genus.

MATERIALS AND METHODS

All *Stasimopus* material in the National Collection of Arachnida, Plant Protection Research Institute (NCA), and the Ditsong National Museum of Natural History, formerly Transvaal Museum (TMSA), both in Pretoria, South Africa, was borrowed and examined for this study. These collections house most of the *Stasimopus* material collected to date from localities falling within Gauteng Province and adjacent areas. Type specimens of all *Stasimopus* species and specimens used to describe opposite sexes after the original descriptions were borrowed from the following collections and examined for comparison: Albany Museum, Grahamstown, South Africa (AMGS); Natural History Museum, London, UK (BMNH); South African Museum, Cape Town, South Africa (SAMC); Museum für Naturkunde, Berlin (ZMHB). Only the types of *Stasimopus caffrus* (C.L. Koch, 1842) and *Stasimopus rufidens* (Ausserer, 1871) could not be located. No other material is available for the former species, but the type of *P. natalensis*, a junior synonym of *S. rufidens*, and additional material of that species in the TMSA were examined. Types of the new species described in this contribution are deposited in the TMSA and the American Museum of Natural History (AMNH).

Additional material was collected using pitfall traps to obtain adult males, and by scraping away the surface layer of soil to locate the burrows of females and juveniles. Specimens were fixed in 96% ethanol for several weeks and then transferred to 70% ethanol for long-term preservation. Selected specimens were photographed alive prior to fixation. Measurements were taken using a pair of digital calipers accurate to 0.1 mm and spine counts recorded using a Nikon SMZ1-10 stereomicroscope. Meristic data were recorded from the sinistral appendage unless missing, in which case the dextral appendage was used. Appendage measurements were taken along the dorsal midline of the segment. Carapace length was measured along the midline from the anterior to the posterior margins, carapace width across the widest points, just above the coxae of the second pair of legs. Images were prepared using a Zeiss SteREO Discovery.V20 and AxioVision V4.8.2.0. Species descriptions are ordered in the text based on morphological similarity. A comprehensive description is provided for the first species. Only characters considered taxonomically informative within the genus are described for each spe-

TABLE 1. Currently recognized infrageneric taxa in the trapdoor spider genus *Stasimopus* Simon, 1892 (Ctenizidae Thorell, 1887), with countries, provinces, and districts in which recorded. Data from primary taxonomic literature with administrative divisions determined for published locality records.

<i>Stasimopus artifex</i> Pocock, 1902	South Africa: Eastern Cape Prov.: Bathurst, Queenstown districts
<i>Stasimopus astutus</i> Pocock, 1902	South Africa: Eastern Cape Prov.: Bedford, Jansenville, Pearston districts
<i>Stasimopus bimaculatus</i> Purcell, 1903	South Africa: Eastern Cape Prov.: Willowmore Distr.
<i>Stasimopus brevipalpis</i> Purcell, 1903	South Africa: Western Cape Prov.: Montagu, Swellendam districts
<i>Stasimopus caffrus</i> (C.L. Koch, 1842)	South Africa: locality unknown
<i>Stasimopus castaneus</i> Purcell, 1903	South Africa: Eastern Cape: Port Elizabeth Distr.
<i>Stasimopus coronatus</i> Hewitt, 1915	South Africa: Free State Prov.: Kroonstad Distr.
<i>Stasimopus dreyeri</i> Hewitt, 1915	South Africa: Free State Prov.: Kroonstad Distr.
<i>Stasimopus erythrogynathus</i> Purcell, 1903	South Africa: Western Cape Prov.: Worcester Distr.
<i>Stasimopus fordi</i> Hewitt, 1927	Lesotho: Maseru Distr.
<i>Stasimopus filmeri</i> , n. sp.	South Africa: Gauteng Prov.: Krugersdorp Distr.
<i>Stasimopus gigas</i> Hewitt, 1915	South Africa: Free State Prov.: Koppies Distr.
<i>Stasimopus griswoldi</i> , n. sp.	South Africa: North West Prov.: Brits Distr.
<i>Stasimopus hewitti</i> , n. sp.	South Africa: Gauteng Prov.: Krugersdorp, Pretoria, Randburg, Wonderboom districts
<i>Stasimopus insculptus</i> Pocock, 1901	South Africa: Eastern Cape Prov.: King William's Town, Stutterheim districts
<i>Stasimopus insculptus peddiensis</i> Hewitt, 1917	South Africa: Eastern Cape Prov.: Peddie Distr.
<i>Stasimopus kentanicus</i> Purcell, 1903	South Africa: Eastern Cape Prov.: Centani Distr.
<i>Stasimopus kolbei</i> Purcell, 1903	South Africa: Eastern Cape Prov.: Centani Distr.
<i>Stasimopus leipoldti</i> Purcell, 1902	South Africa: Western Cape Prov.: Clanwilliam Distr.
<i>Stasimopus longipalpis</i> Hewitt, 1917	South Africa: Northern Cape Prov.: Kimberley Distr.
<i>Stasimopus mandelai</i> Hendrixson and Bond, 2004	South Africa: Eastern Cape Prov.: Albany Distr.
<i>Stasimopus maraisi</i> Hewitt, 1914	South Africa: Northern Cape Prov.: Victoria West Distr.
<i>Stasimopus meyeri</i> (Karsch, 1879)	South Africa: Northern Cape Prov.: Calvinia Distr.
<i>Stasimopus minor</i> Hewitt, 1915	South Africa: Free State: Bloemfontein Distr.
<i>Stasimopus nanus</i> Tucker, 1917	South Africa: Free State Prov.: Smithfield Distr.
<i>Stasimopus nigellus</i> Pocock, 1902	South Africa: Free State Prov.: Koppies Distr.; North West Prov.: Potchefstroom Distr.
<i>Stasimopus obscurus</i> Purcell, 1908	South Africa: Northern Cape Prov.: Namakwaland Distr.
<i>Stasimopus oculatus</i> Pocock, 1897	South Africa: Free State Prov.: Bloemfontein, Ladybrand, Reddersburg districts; Northern Cape: Kimberley Distr.
<i>Stasimopus palpiger</i> Pocock, 1902	South Africa: Eastern Cape Prov.: Graaff Reinet Distr.
<i>Stasimopus patersonae</i> Hewitt, 1913	South Africa: Eastern Cape Prov.: Albany, Port Elizabeth districts

<i>Stasimopus poweri</i> Hewitt, 1915	South Africa: Northern Cape Prov.: Herbert Distr.
<i>Stasimopus purcelli</i> Tucker, 1917	South Africa: Western Cape Prov.: Caledon Distr.
<i>Stasimopus quadratimaculatus</i> Purcell, 1903	South Africa: Western Cape Prov.: Montagu Distr.
<i>Stasimopus qumbu</i> Hewitt, 1913	South Africa: Eastern Cape Prov.: Qumbu Distr.
<i>Stasimopus robertsi</i> Hewitt, 1910	South Africa: Gauteng Prov.: Pretoria, Wonderboom districts; North West Prov.*: Molopo, Potchefstroom districts
<i>Stasimopus rufidens</i> (Ausserer, 1871)	South Africa: KwaZulu-Natal Prov.: Estcourt Distr.
<i>Stasimopus schoenlandi</i> Pocock, 1900	South Africa: Eastern Cape Prov.: Albany, Jansenville, Port Elizabeth, Somerset East, Uitenhage districts
<i>Stasimopus schreineri</i> Purcell, 1903	South Africa: Eastern Cape Prov.: Port Elizabeth, Somerset East districts; Northern Cape: Hanover Distr.
<i>Stasimopus schultzei</i> Purcell, 1908	South Africa: Northern Cape Prov.: Namakwaland Distr.
<i>Stasimopus spinipes</i> Hewitt, 1917	South Africa: Eastern Cape Prov.: East London Distr.
<i>Stasimopus spinosus</i> Hewitt, 1914	South Africa: Eastern Cape Prov.: Keiskammahoek, Middeldrift, Victoria East districts
<i>Stasimopus steynsburgensis</i> Hewitt, 1915	South Africa: Eastern Cape Prov.: Steynsburg Distr.
<i>Stasimopus suffuscus</i> Hewitt, 1916	South Africa: Mpumalanga Prov.: Balfour Distr.
<i>Stasimopus tysoni</i> Hewitt, 1919	South Africa: Eastern Cape Prov.: Bathurst Distr.
<i>Stasimopus umtaticus</i> Purcell, 1903	South Africa: Eastern Cape Prov.: Umtata Distr.
<i>Stasimopus umtaticus rangeri</i> Hewitt, 1927	South Africa: Eastern Cape Prov.: King William's Town Distr.
<i>Stasimopus unispinosus</i> Purcell, 1903	South Africa: Northern Cape Prov.: De Aar, Hanover districts

**Stasimopus dubius* Hewitt, 1913, a junior synonym of *S. robertsi*.

cies thereafter. Terminology follows Raven (1985), Dippenaar Schoeman (2002), and Hendrixson and Bond (2004).

Locality records of specimens collected for this study were georeferenced in the field with a portable Garmin Geko II GPS. Museum specimen records were retroactively georeferenced using the guidelines presented in Chapman and Wieczorek (2006). Coordinates were obtained from 1:50 000 or 1:250 000 topocadastral maps (available from the Surveyor General, Pretoria), Google Maps, or Google Earth. Retroactive georeferences are cited in square brackets in the Material Examined sections. The distribution map was prepared with ArcGIS 9.3. Point locality records were overlain on a composite map of elevation derived from a 90 m digital elevation model (Jarvis et al., 2008). Only records based on adult males were plotted for *Stasimopus hewitti*, n. sp., *Stasimopus griswoldi*, n. sp., and *S. robertsi* due to the uncertainty of records based solely on females. Vegetation types occurring at the georeferenced locality records of each species were identified by intersecting records with the most recent vegetation map for South Africa (Mucina and Rutherford, 2006). Additional habitat data are based on field observations and the South African Land Types database (ARC, 1972–2006). Soils are described following Fey (2010). Estimates of habitat transformation within the known range of each species were derived from a recent land-cover classification for Gauteng Province (GTI, 2009).

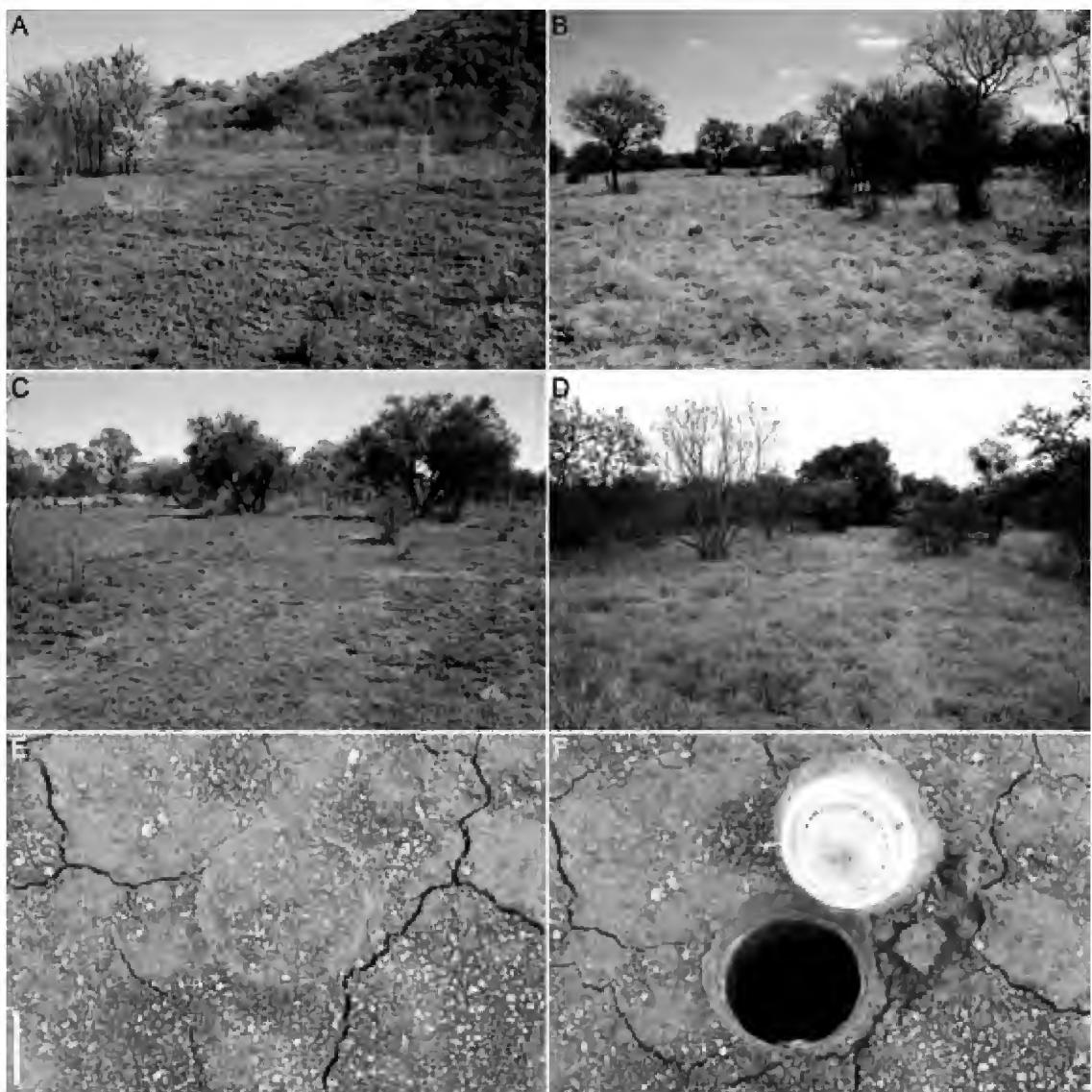


FIGURE 1. Habitats and burrows of *Stasimopus* Simon, 1892, from Gauteng and North West Provinces, South Africa. A. *Stasimopus robertsi* Hewitt, 1910, habitat, Faerie Glen Nature Reserve, Gauteng Province, *Acacia karroo* open woodland on red-structured clay soils. B. *Stasimopus hewitti*, n. sp., habitat, Rodeplaat Dam Nature Reserve, Gauteng Province, *Acacia-Cymbopogon/Setaria* open woodland on well-drained, red soils. C. *Stasimopus griswoldi*, n. sp., habitat, Farm Hartebeestfontein 473, North West Province, *Acacia karroo* open woodland on red, structured clay soils. D. *Stasimopus filmeri*, n. sp., habitat, Mokoya Lodge, Gauteng Province, *Acacia caffra* closed woodland on rocky soils. E, F. *S. hewitti*, n. sp., burrow entrance with trapdoor, Kameeldrift, Gauteng Province. E. Trapdoor closed. F. Trapdoor open. Scale: 1 cm.

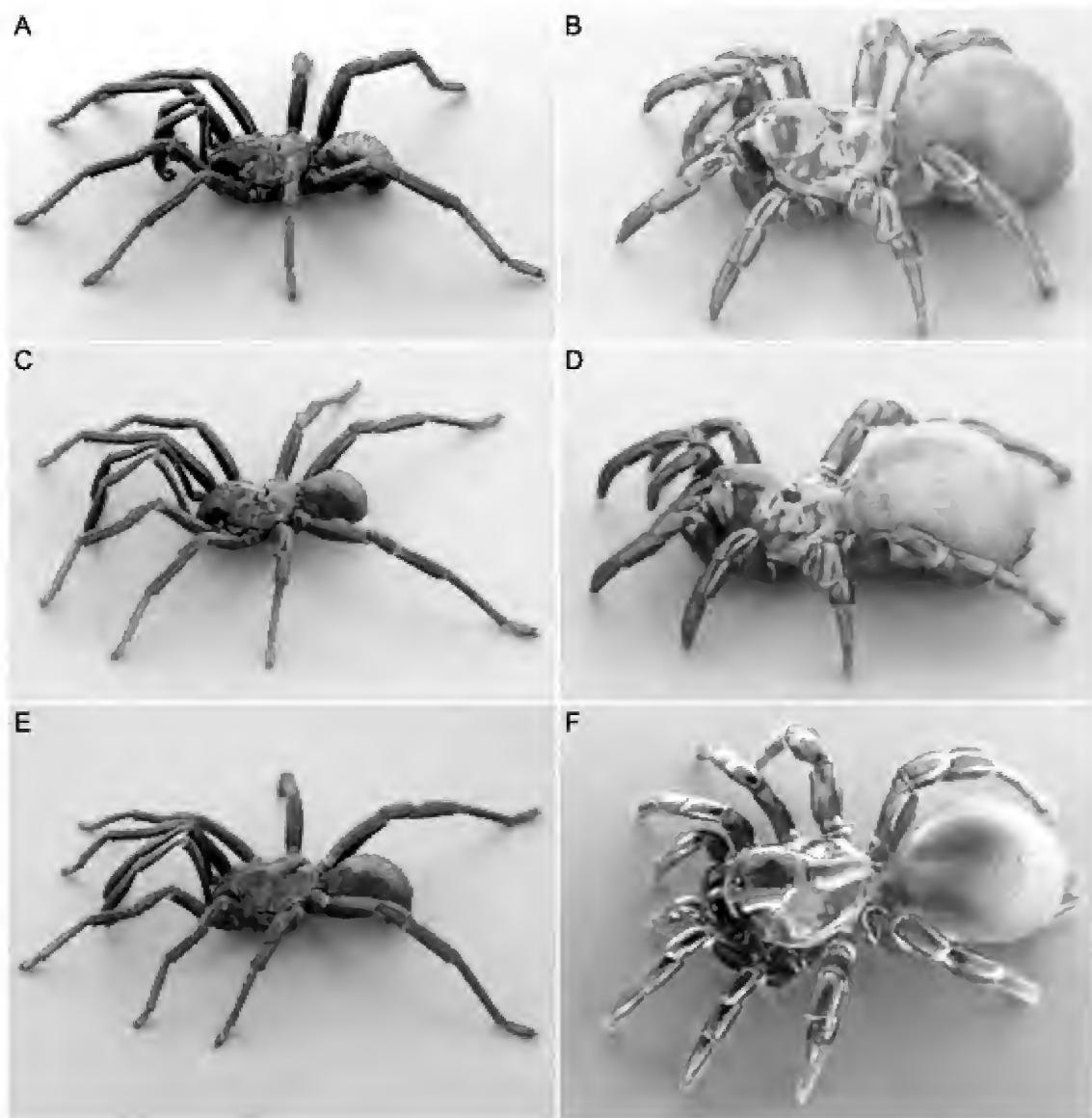


FIGURE 2. Four species of *Stasimopus* Simon, 1892, habitus in life. A. *Stasimopus hewitti*, n. sp. B. *Stasimopus robertsi* Hewitt, 1910. C, D. *Stasimopus griswoldi*, n. sp. E, F. *Stasimopus filmeri*, n. sp. A, C, E. ♂. B, D, F. ♀.

SYSTEMATICS

Stasimopus Simon, 1892

Stasimopus Simon, 1892: 82; Pocock, 1897: 726–728; Hewitt, 1915a: 75–85; Roewer, 1942: 159; Raven, 1985: 143; Dippenaar Schoeman, 2002: 31–38.

TYPE SPECIES: *Stasimopus cafrus* (C.L. Koch, 1842).

DIAGNOSIS: *Stasimopus* is currently placed in the family Ctenizidae, based on the following putative synapomorphies (Raven, 1985: 140): chelicerae with two rows of teeth; outer surface of fangs smooth; carapace fovea strongly procurved; male pedipalpal bulb simple, pyriform; first two pairs of legs, distal segments with dense patches of short spines on lateral surfaces (females); tarsi with three claws; paired claws with few teeth (females); distal segment of posterior spinnerets domed. Species of *Stasimopus* differ from other ctenizid genera based on the following combination of characters (Raven, 1985: 142–143): anterior lobe of maxillae anteriorly produced; group of ocelli twice as wide as long; leg III tibia not excavated dorsally. The monophyly of *Stasimopus* is presently untested but presumed based on the conservative morphology of its component species, and it is the only ctenizid known to occur in southern Africa (Dippenaar Schoeman, 2002).

DISTRIBUTION: The genus *Stasimopus* is known only from South Africa and Lesotho (table 1). It has been recorded in all provinces of South Africa except Limpopo. Given the known distribution, this genus will probably also be recorded in Botswana, Namibia, and Swaziland in the future.

INCLUDED TAXA: The description of three new species in the present contribution raises the number of infrageneric taxa recognized in the genus to 48 (table 1).

Key to adult males of four *Stasimopus* species from
Gauteng and North West provinces, South Africa

1. Legs I and II, spinules within tarsal scopulae present (figs. 12F, 19F, 23F); abdomen, dorsal surface blue (fig. 2A, C, E)..... 2
- Legs I and II, spinules within tarsal scopulae absent (fig. 8F); abdomen, dorsal surface black..... *S. robertsi*
2. Carapace fovea with prominent, posteriorly inclined hornlike protuberance (figs. 21A, C, 22A, C)..... *S. filmeri*, n. sp.
- Carapace fovea without posteriorly inclined hornlike protuberance..... 3
4. Pedipalp reaching distal end of leg I when both extended; leg I tibia convex in lateral profile (fig. 19C)..... *S. griswoldi*, n. sp.
- Pedipalp reaching metatarsus of leg I when both extended; leg I tibia sublinear in lateral profile (fig. 12C)..... *S. hewitti*, n. sp.

Stasimopus robertsi Hewitt, 1910
 Figs. 2B, 4A, 5A, B, 6–9, tables 2, 3

Stasimopus robertsi Hewitt, 1910: 75, 76 (D♂); 1915a: 79; 1916: 204 (part; D♀; female identifications uncertain and probably include misidentifications); Dippenaar-Schoeman, 2002: 33, 37, table 2. *Stasimopus dubius* Hewitt, 1913: 410–412 (D♀), synonymized by Hewitt, 1916: 204.

TYPE MATERIAL: SOUTH AFRICA: Gauteng Prov.: Pretoria Distr.: Holotype ♂ (TMSA 2746), Mayville, near Mountain View Bridge [25.7033°S 28.1735°E], 11.vi.1910, Rev. N. Roberts [examined].

DIAGNOSIS: Adult males of *S. robertsi* may be separated from those of all other *Stasimopus* species recorded in Gauteng and North West provinces by the following combination of characters: carapace with smooth postocular carinae (fig. 6A); pedipalps reaching distal ends of leg I when both extended forward; tibia of leg I distinctly convex in lateral profile (fig. 8C). They may be further separated from adult males of the three new species described below by the absence of spinules in the tarsal scopulae (fig. 8F). Females and immature stages of *S. robertsi* are morphologically indistinguishable from those of *S. hewitti*, n. sp., *S. griswoldi*, n. sp., and several other species of *Stasimopus*. Adult males, females, and immature individuals of *S. robertsi* may be separated from those of *S. filmeri*, n. sp., by the absence of a prominent, posteriorly inclined hornlike protuberance of the carapace fovea.

DESCRIPTION: Based on the holotype ♂ and other material examined.

General: ♂: Medium sized (carapace length, 6–7 mm, table 2), more gracile than females with smaller bodies and long, slender legs. Relative length of legs, IV>I>II>III. Pedipalps and legs, dorsal and lateral surfaces with scattered setae along entire length (fig. 8), dorsomedian rows of enlarged setae not present on femora. ♀: Medium to large (carapace length 9–11 mm), robust, with relatively short, stocky legs. Relative length of legs, IV>III>I>II. Legs, pedipalps, sternum, and labium moderately setose, more densely so on distal segments, especially tarsi, which are densely setose distally. Abdomen, including spinnerets, densely covered with short setae.

Color: ♂: Carapace and chelicerae black. Sternum, labium, and leg coxae dark brown. Legs I, II, and IV, metatarsus and tarsus, leg III tarsus, and pedipalp tibia orange; rest of legs and pedipalps black. Abdomen, dorsal surface black; pale band across first pair of book lungs, second pair of lung covers pale; spinnerets pale; rest of ventral surface black. ♀: Carapace, dorsal surfaces of pedipalps and legs medium to dark brown. Ocular tubercles infuscated. Sternum, labium, and leg coxae slightly paler than carapace. Pedipalp coxae and legs I and II, ventral surfaces similar in color to dorsal surfaces; legs III and IV, ventral surfaces paler. Abdomen, dorsal surface uniformly medium or dark gray without chevrons or blotches; ventral surface paler to yellowish brown anteriorly and around book lungs; spinnerets similar in color to ventral surface.

Carapace: ♂: Shape rounded (fig. 6A, C). Cephalic region markedly elevated, with few, small scattered setae posterior to ocelli; fovea procurved, occasionally with slight posterior extension medially. Median and lateral postocular carinae distinct, smooth; lateral postocular

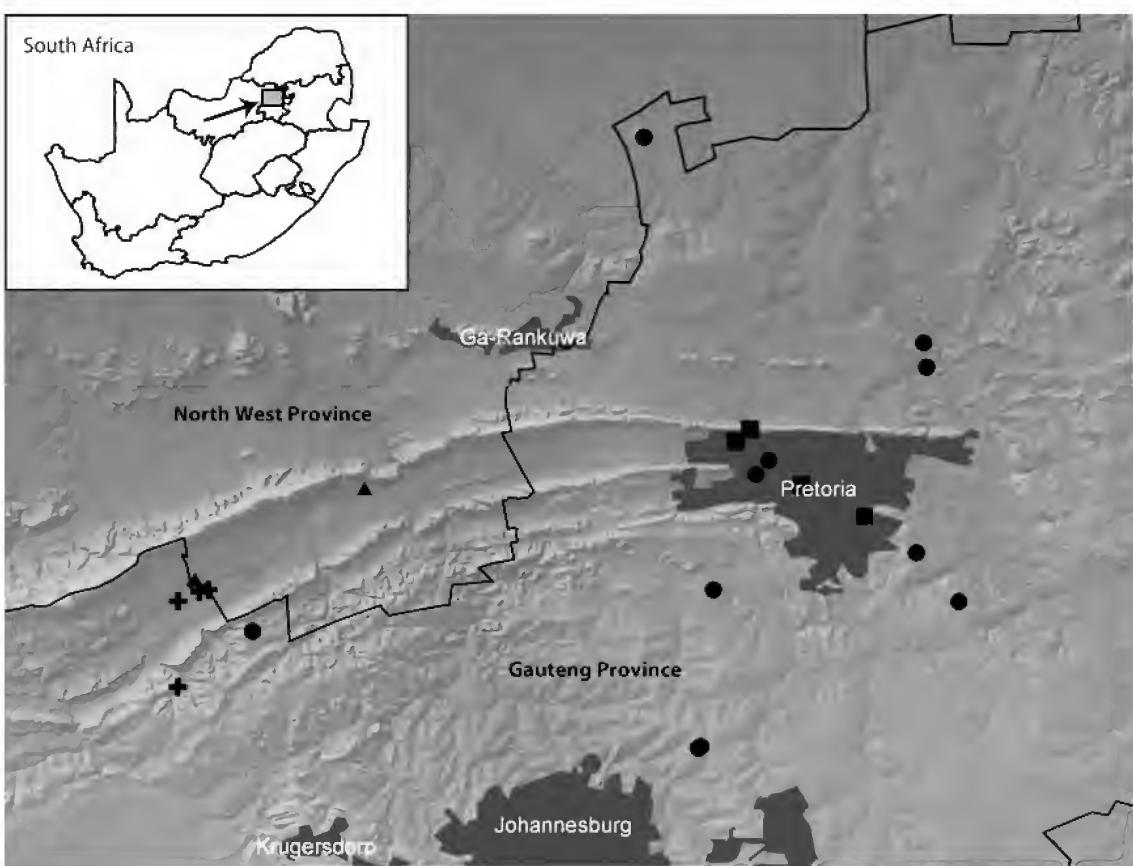


FIGURE 3. Known distributions of *Stasimopus robertsi* Hewitt, 1910 (squares), *Stasimopus hewitti*, n. sp. (circles), *Stasimopus griswoldi*, n. sp. (triangles), and *Stasimopus filmeri*, n. sp. (crosses), on topography with major urban areas and provincial boundaries indicated. Inset indicates extent of mapped region within South Africa.

carinae extending approximately two-thirds toward fovea, becoming transverse posterior to posterior ocelli. Thoracic region, surfaces with papillate texture, asetose. Lateral margins of carapace and surfaces between ocelli and anterior margin transversely wrinkled. ♀ (fig. 7A, C): Shape ovoid. Cephalic region markedly elevated, fovea procurved, varying from gently procurved to almost V-shaped. Postocular carinae absent, surfaces glabrous except for patch of setae anterior to anteromedian ocelli and between posterolateral ocelli, with some setae extending in three rows (one medially and two median laterally, posterior to posterior ocelli) approximately one-third to half distance to fovea.

Chelicerae: ♂, ♀: Chelicerae large (smaller in ♂). Dorsal and retrolateral surfaces glabrous, prodorsal surfaces sparsely setose, setae more dense, and becoming spiniform distally toward rastellum and fang articulation. Rastellum distinct, comprising elevated process bearing short, thick spines (often worn down). Ventral surface, proventral and retroventral margins each bearing four or five large teeth, with several small denticles between, teeth in retroventral row slightly larger than those in proventral row.

Ocelli: ♂, ♀: Ocular area wider than long (fig. 5A, B). No ocular tubercle evident, each ocellus elevated from carapace surface on separate tubercle. Anterior ocelli situated short distance from anterior carapace margin. Anterior row of ocelli slightly procurved, posterior row slightly recurved. Anteromedian ocelli small, approximately half diameter of anterolateral ocelli in ♀, larger in ♂, subequal or slightly smaller than anterolateral ocelli, situated approximately two anteromedian ocular diameters apart. Anterolateral ocelli located approximately one anteromedian ocular diameter apart from anteromedian ocelli. Posteromedian ocelli round, situated posterior or slightly posterolateral to anterolateral ocelli, slightly larger than anteromedian ocelli, but smaller than anterolateral ocelli. Posterolateral ocelli situated lateral to posteromedian ocelli, approximately one anteromedian ocular diameter apart from, and approximately equal in size, to posteromedian ocelli. Posterior ocelli of ♂ smaller in size relative to anterior ocelli and varying in distance apart.

Sternum, labium, and maxillae: ♂, ♀ (figs. 6B, 7B): Sternum wide, posterior margin obtuse; single pair of longitudinally elongated sigilla, situated submedially, shallow, often indistinct. Labium longer than wide. Maxillae with distinct prolateral lobe distally. Labium and maxillae without cuspules (♂) or with few cuspules (♀), those on maxillae restricted to ventral surface, proximally adjacent to labium.

Pedipalps: ♂ (fig. 8A, B): Pedipalps elongated and slender, reaching distal end of leg I when both extended forward. Tibia slightly swollen, shallowly concave in lateral profile. Cymbium without spines. Bulb simple, pyriform, subequal in width to cymbium, maximum width approximately equal to width of tibia, embolus long, slender, cylindrical, gently curved, and gradually tapering. ♀: Tibia shallowly concave in lateral profile; dorsal surface with few or no spines along distal margin. Tibia and tarsus, retrolateral surfaces densely covered

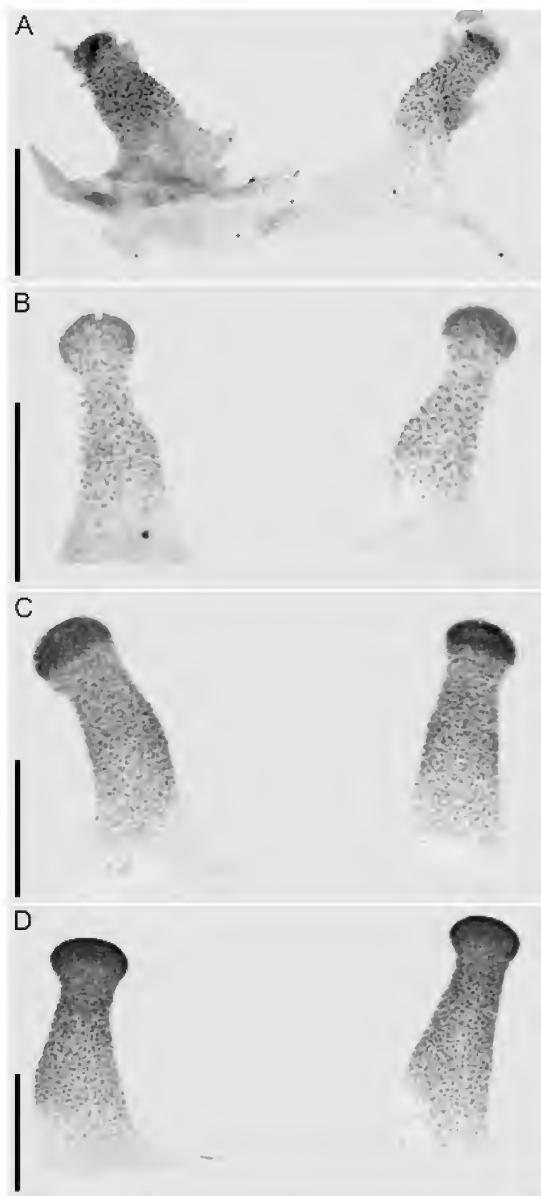


FIGURE 4. Four species of *Stasimopus* Simon, 1892, spermathecae. A. *Stasimopus robertsi* Hewitt, 1910, ♀ (TMSA 24024). B. *Stasimopus hewitti*, n. sp., ♀ (TMSA 23989). C. *Stasimopus griswoldi*, n. sp., ♀ (TMSA 24001). D. *Stasimopus filmeri*, n. sp., ♀ (TMSA 23998). Scale: 0.5 mm

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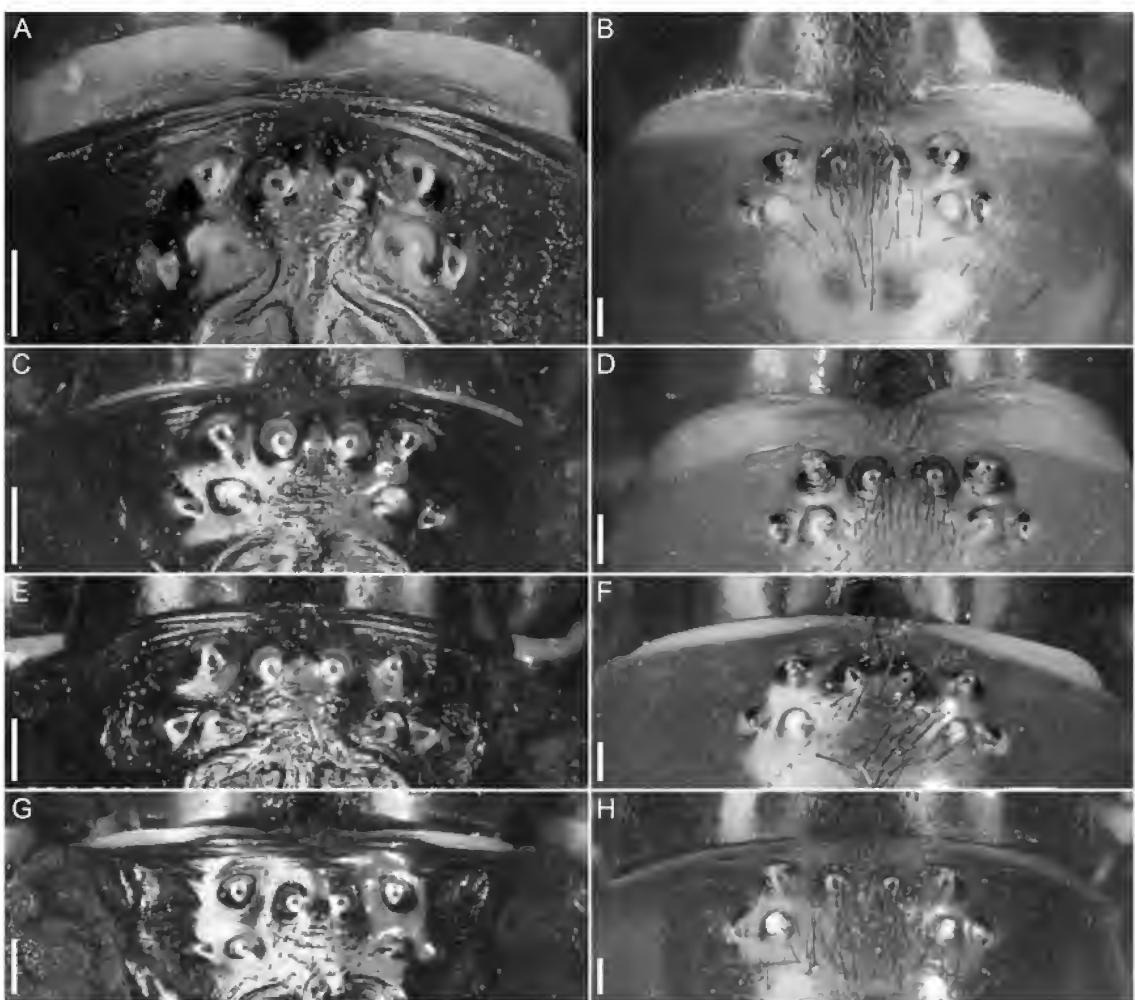


FIGURE 5. Four species of *Stasimopus* Simon, 1892, ocular pattern. A, B. *Stasimopus robertsi* Hewitt, 1910. A. Paratype ♂ (TMSA 3084). B. ♀ (TMSA 3226). C, D. *Stasimopus hewitti*, n. sp. C. ♂ (TMSA 23989). D. ♀ (TMSA 3154). E, F. *Stasimopus griswoldi*, n. sp. E. ♂ (TMSA 23993). F. ♀ (TMSA 23998). G, H. *Stasimopus filmeri*, n. sp. G. ♂ (TMSA 24000). H. ♀ (TMSA 24001). Scale: 0.5 mm.

with robust articulated sigmoid spines, more sparsely so on prolateral surfaces. Tarsus, dorsal surface with small patch of spinules proximally and row of trichobothria extending from it distally; single tarsal claw with single, large tooth proximally.

Legs: ♂: Legs I and II (fig. 8C-F), spines on ventral and lateral surfaces of tibia, metatarsus, and tarsus articulated, long, straight with a subtle hook distally; tibia convex proximally in lateral profile; tibia and metatarsus, ventral surfaces densely spinose along entire length of segment; tarsus slender, ventral surfaces with scopulae not extending entire length of segment, spinules absent among scopular setae, lateral surfaces with few spines adjacent to scopulae, additional spinules arranged in a V-shaped pattern below third tarsal claw; 7-10 scattered trichobothria dorsally. Leg III patella, prolateral surface produced distally in dorsal

TABLE 2. Measurements (mm), given as mean and range, for adult males of four species of *Stasimopus* Simon, 1892, trapdoor spiders (Ctenizidae Thorell, 1887), from South Africa.

Species	<i>S. robertsi</i> Hewitt, 1910	<i>S. hewitti</i> , n. sp.	<i>S. griswoldi</i> , n. sp.	<i>S. filmeri</i> , n. sp.
Sample size (<i>n</i>)	3	13	13	6
Carapace length	6.55 (6.01–6.94)	5.94 (5.58–6.41)	7.64 (7.09–8.52)	8.08 (7.13–8.79)
Carapace width	5.59 (5.23–5.81)	5.13 (4.83–5.45)	6.78 (6.22–7.64)	7.19 (6.39–7.75)
Pedipalp femur length	7.20 (7.01–7.49)	5.32 (4.83–5.71)	8.32 (7.69–8.85)	8.60 (8–9.19)
Pedipalp patella length	4.46 (4.4–4.51)	3.57 (3.17–3.8)	5.99 (5.5–6.37)	6.05 (5.55–6.42)
Pedipalp tibia length	6.38 (6.19–6.6)	4.37 (3.99–4.72)	6.59 (6.15–7.12)	6.72 (6.48–7.04)
Pedipalp tibia height	1.01 (0.9–1.09)	1.19 (1.07–1.27)	1.36 (1.23–1.47)	1.29 (1.23–1.33)
Leg I femur length	7.13 (6.9–7.3)	6.07 (5.63–6.51)	7.76 (7.24–8.29)	8.06 (7.41–8.63)
Leg I patella length	2.89 (2.77–3.04)	2.67 (2.43–3.02)	3.58 (3.41–3.75)	3.65 (3.29–3.85)
Leg I tibia length	4.69 (4.5–4.95)	3.87 (3.65–4.11)	4.75 (4.4–5.2)	4.71 (4.36–4.94)
Leg I metatarsus length	5.07 (4.98–5.21)	4.82 (4.27–5.19)	5.96 (5.57–6.24)	5.99 (5.53–6.32)
Leg IV femur length	5.79 (5.53–5.95)	5.55 (5.13–5.98)	6.86 (6.31–7.42)	7.21 (6.61–7.69)
Leg IV metatarsus length	6.04 (5.61–6.33)	6.06 (5.49–6.72)	7.32 (6.66–7.86)	7.57 (6.97–7.96)
Leg IV tarsus length	2.57 (2.34–2.7)	2.49 (2.34–2.7)	2.72 (2.45–3.03)	2.65 (2.45–2.82)

TABLE 3. Spine counts and number of teeth on tarsal claws, given as mean and range, for adult males of four species of *Stasimopus* Simon, 1892, trapdoor spiders (Ctenizidae Thorell, 1887), from South Africa.

Species	<i>S. robertsi</i> Hewitt, 1910	<i>S. hewitti</i> , n. sp.	<i>S. griswoldi</i> , n. sp.	<i>S. filmeri</i> , n. sp.
Sample size (<i>n</i>)	3	13	13	6
Leg I tarsus prolateral	3 (1–6)	9 (6–13)	16 (7–23)	15 (10–19)
Leg I tarsus retrolateral	2 (0–4)	12 (8–16)	20 (14–28)	17 (15–19)
Leg I tarsus within scopulae	0	5 (2–9)	12 (4–20)	10 (7–13)
Leg I metatarsus	28 (23–34)	20 (10–35)	55 (32–86)	50 (40–56)
Leg I tibia	25 (19–30)	11 (5–20)	64 (52–86)	61 (49–78)
Leg I patella	3 (1–4)	1 (0–2)	9 (0–72)	4 (1–7)
Leg II tarsus prolateral	3 (2–6)	7 (1–11)	14 (6–20)	11 (7–16)
Leg II tarsus retrolateral	3 (1–6)	11 (8–15)	17 (12–23)	14 (10–19)
Leg II tarsus within scopulae	0	4 (3–7)	7 (1–11)	7 (4–10)
Leg II metatarsus	27 (23–30)	16 (8–26)	42 (25–57)	41 (34–47)
Leg II tibia	19 (15–24)	10 (6–19)	35 (26–46)	33 (24–42)
Leg II patella	1 (0–2)	0	0 (0–3)	1 (0–1)
Leg III tarsus prolateral	7 (5–9)	10 (6–14)	12 (8–19)	11 (9–14)
Leg III tarsus retrolateral	8 (6–9)	14 (9–19)	19 (15–26)	18 (14–25)
Leg III patella prolateral	4 (3–4)	2 (0–4)	7 (3–12)	12 (5–17)
Leg IV tarsus prolateral	16 (15–16)	16 (5–29)	23 (17–30)	26 (23–34)
Leg IV tarsus retrolateral	10 (8–12)	14 (8–22)	17 (11–24)	18 (11–22)
Leg IV tarsal claws teeth	8 (7–8)	5 (3–7)	7 (3–12)	6 (3–8)



FIGURE 6. *Stasimopus robertsi* Hewitt, 1910, ♂ (TMSA 3084). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

view, prodorsal surface with spinules along entire length; tibia, lateral and ventral surfaces with spines along distal margin; metatarsus (fig. 9A-C), pro- and retrodorsal surfaces with sparse rows of spines along entire length of segment, ventral surface with spines along entire length of segment, dorsal, lateral and ventral surfaces with slender spines on distal margin; tarsus (fig. 9A-C) longer than in legs I and II, ventral surface with dense scopula, pro- and



FIGURE 7. *Stasimopus robertsi* Hewitt, 1910, ♀ (TMSA 3226). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

retrolateral surfaces with spines adjacent to scopula, prodorsal surface with one or two spines distally; 9–11 scattered trichobothria dorsally. Leg IV more robust than preceding legs; patella, dorsal and prodorsal surfaces with patch of spinules extending to approximately half

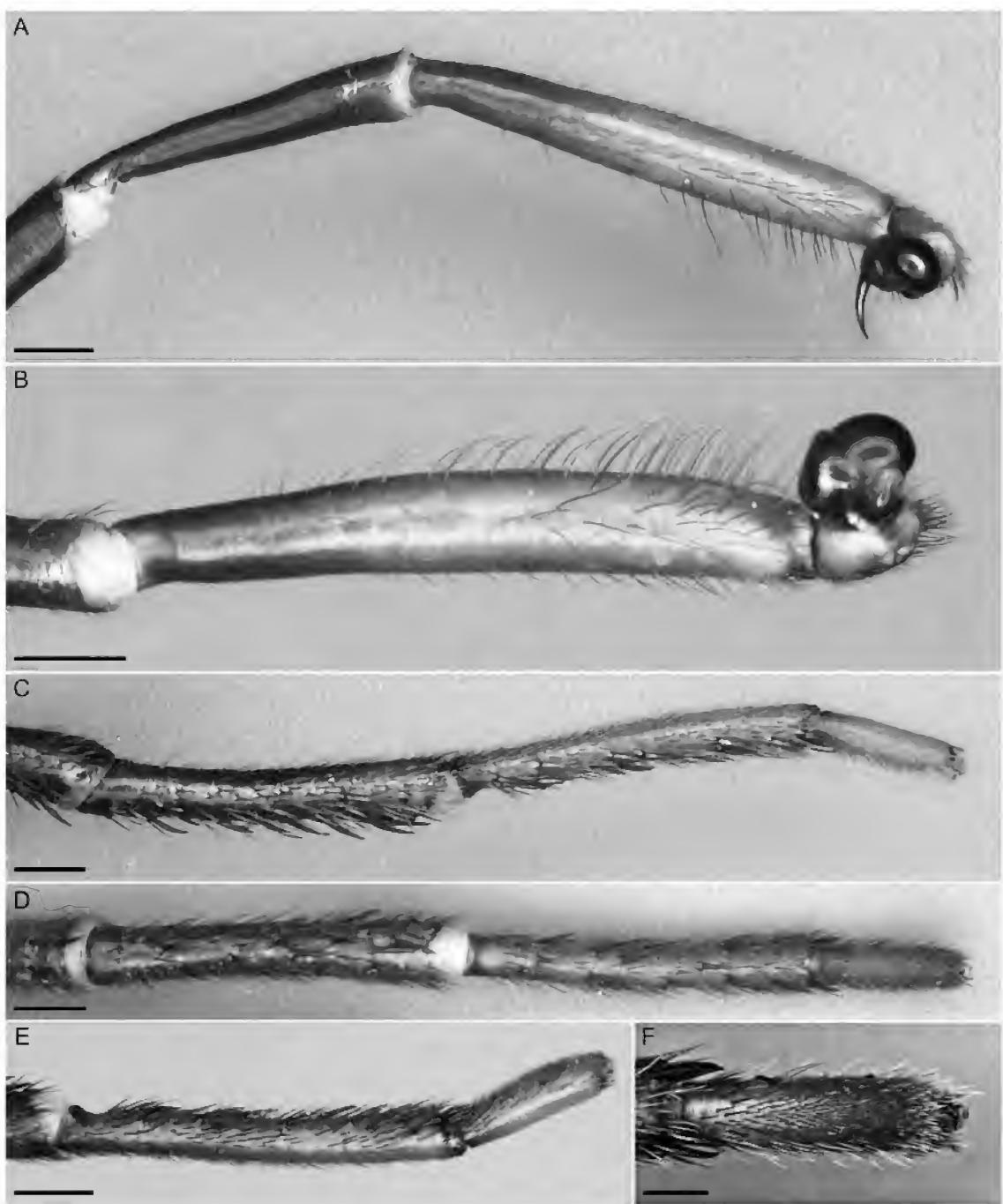


FIGURE 8. *Stasimopus robertsi* Hewitt, 1910, ♂ (TMSA 3084). A. Pedipalp patella, tibia, bulb, prolateral aspect. B. Pedipalp tibia, bulb, ventral aspect. C, D. Leg I patella, tibia, metatarsus, tarsus. C. Prolateral aspect. D. Ventral aspect. E. Leg I metatarsus, tarsus, retrolateral aspect. F. Leg I tarsus, ventral aspect. Scale: A-E, 1 mm. F, 0.5 mm.

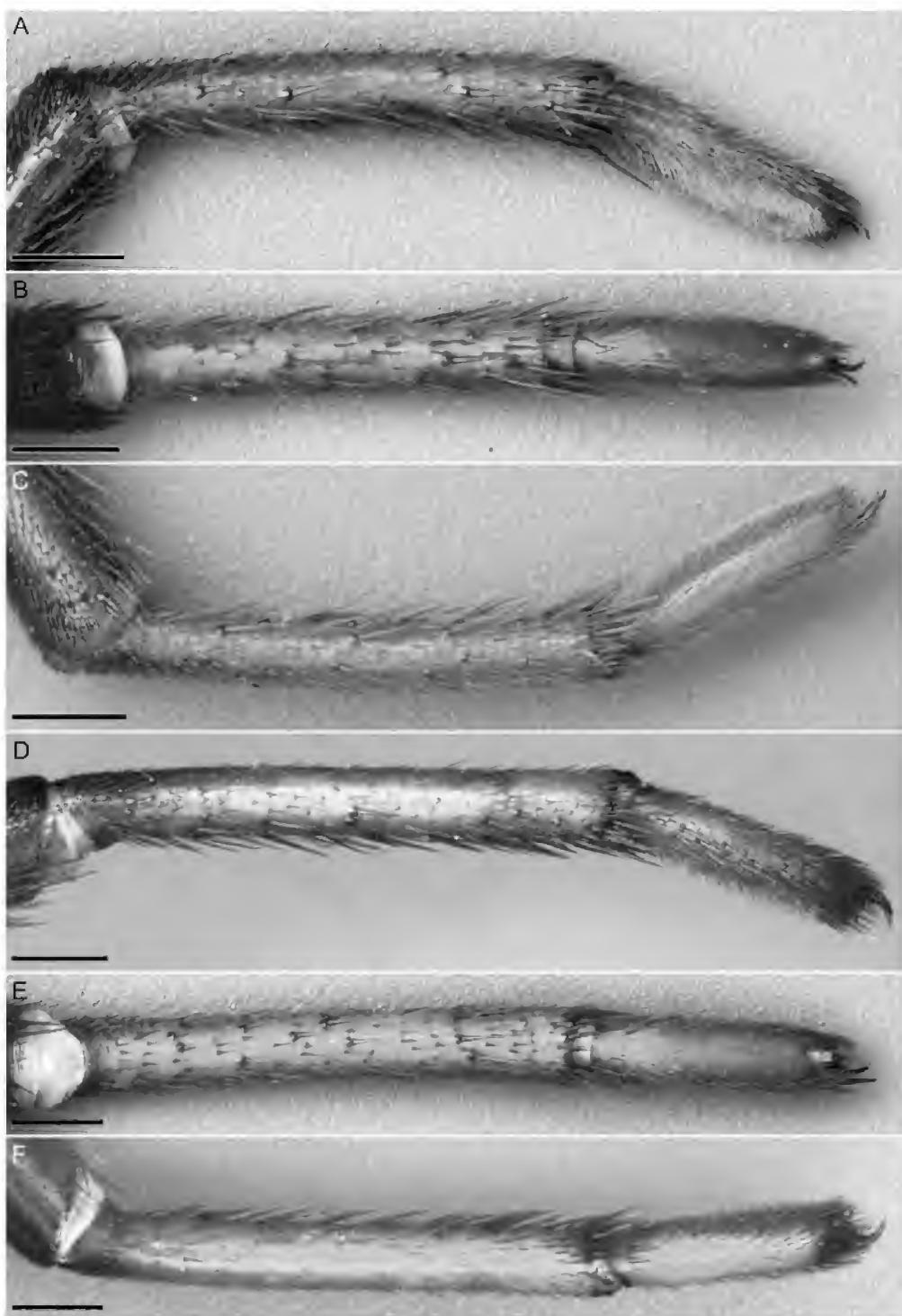


FIGURE 9. *Stasimopus robertsi* Hewitt, 1910, ♂ (TMSA 3084). A-C. Leg III metatarsus, tarsus. D-F. Leg IV metatarsus, tarsus. A, D. Prolateral aspect. B, E. Ventral aspect. C, F. Retrolateral aspect. Scale: 1 mm.v

length of segment, tapering distally; tibia, prolateral surface with slender spines along distal margin; metatarsus (fig. 9D–F), ventral surface with spines extending along entire length of segment and along distal margin, proventral surface with preening comb, comprising slender spines, more elongated than in ♀; tarsus (fig. 9D–F), ventral surface with dense scopulae, pro- and retrolateral surfaces with spines adjacent to scopulae, more dense on prolateral surface; 4–7 scattered trichobothria dorsally. Legs I–IV metatarsi without scopulae; tarsi with distinct third claw. Legs I–III tarsi, paired claws each with sigmoid row of well-developed teeth extending approximately two-thirds length of claw. Leg IV tarsus, paired claws each with two or three long teeth proximally, and often with smaller teeth extending more than half length of claw. ♀: Legs I and II shorter and more slender than III and IV; tibia, metatarsus, and tarsus, pro- and retrolateral surfaces densely covered with short, thick, articulated, sigmoid spines (fig. 16A) along entire length of segment on retrolateral surface of tibia and both surfaces of tarsus and metatarsus, but restricted to distal half of segment on prolateral surface of tibia, those on retroventral surfaces of tibia and metatarsus not elongated; tibia, retrodorsal surface with small patch of spinules at distal margin; metatarsus shallowly concave in lateral profile; tarsus, dorsal surface with 10–14 scattered trichobothria. Leg I metatarsus, prodorsal surface with short, erect setae along entire length of segment (absent on metatarsus of leg II), retrodorsal surface with longer setae along entire length of segment, with patch of spinules extending from proximal margin past midpoint of segment, becoming more sparse distally, and row of trichobothria originating distal to termination of spinules and extending to distal margin of segment. Leg II metatarsus, retrodorsal surface with similar patch of spinules, but extending only midway along segment, row of trichobothria originating within patch of spinules and extending to distal margin of segment. Leg III femur, patella, and tibia very robust, metatarsus and tarsus distinctly more slender; patella, prolateral surface produced distally in dorsal view, prodorsal surface with row of spinules along entire length of segment; tibia, dorsal, pro-, and retrolateral surfaces strongly spinose along distal margin, spines on dorsal surface more slender than those on lateral surfaces; metatarsus, pro- and retrodorsal surfaces with rows of slightly curved spines for length of segment, dorsal surface with more slender spines situated between these rows on proximal third of segment, row of trichobothria extending from these to distal margin; tarsus, dorsal surface with 13–16 scattered trichobothria, prolateral surface with several spines, retrolateral surface with fewer. Leg IV robust like leg III; patella, dorsal and prodorsolateral surfaces with patch of red spinules not reaching distal margin of segment, tapering distally; tibia, prolateral surface with distinct, dense tuft of long, dorsally oriented setae, scattered spinules extending entire length of segment within tuft; metatarsus, dorsal surface with row of trichobothria, prolateral surface with spinules along length of segment, more densely so distally, retrolateral surface without spinules but with preening comb retroventrally, comprising row of four or five elongated slender spines on distal margin; tarsus, dorsal surface with 6–8 scattered trichobothria, prolateral surface with spines, retrolateral surface without spines. Legs I–IV tarsi with distinct third claw; I–III tarsi, paired claws each with two or three teeth proximally; IV tarsi, paired claws longer than on preceding legs and without teeth.

Abdomen: ♂: Spinnerets short, robust; distal segment of posterior spinnerets conical. ♀: Anterior spinnerets small. Posterior spinnerets large and robust, distal segment conical.

Spermathecae: Entire, with inflated terminus (fig. 4A).

REMARKS: Hewitt's (1910) description of *S. robertsi* was based on females collected from several localities around Pretoria by A. Roberts and G.P.F. van Dam of the Transvaal Museum. The morphological similarity between females of *S. robertsi* and *S. hewitti*, n. sp., and the occurrence of both species in the vicinity of Pretoria, casts uncertainty on Hewitt's (1910, 1915a, 1916) identifications of female specimens from this area. Female specimens from Hatfield and Wonderboompoort listed in Additional Material were assumed to be conspecific with *S. robertsi* when associated with adult males bearing the same collection data. However, the identity of female material from localities at which males were not collected is uncertain. The holotype female of *S. dubius* (TMSA 2745) was also examined. Hewitt (1916) synonymized this species with *S. robertsi*, but the validity of this synonymy cannot be confirmed until adult males are collected at the type locality of *S. dubius*.

ADDITIONAL MATERIAL: **SOUTH AFRICA: Gauteng Prov.: Pretoria Distr.:** Faerie Glen Nature Reserve, Lynnwood [25.7743°S 28.2970°E], 12.vi.2011, C. Erasmus, 2 ♂ (photograph), 25°46'24.9"S 28°17'36.7"E, 3.viii.2011, I. Engelbrecht and GDARD field staff, IE11-008, 1 ♀, 2 juv. (TMSA 24024); Hatfield [25.7451°S 28.2371°E], 25.iv.1915, G. van Dam, 1 ♂ (TMSA 22781), 3 ♀, 3 juv. (TMSA 3121–3126); Magaliesberg, Wonderboompoort, Pretoria [25.6918°S 28.1873°E], 14.iv.1915, A. Roberts, 1 ♂ (TMSA 3084), 19.vi.1915, A. Roberts, 1 ♀ (TMSA 3226), xii.1921, 1 ♀ (TMSA 6146).

UNVERIFIED RECORDS: The following material, identified as *S. robertsi* mostly by Hewitt (1916), was examined, but the identifications cannot be verified until adult males are collected in the vicinity. **SOUTH AFRICA: Gauteng Prov.: Pretoria Distr.:** Garstfontein [25.8327°S 28.3416°E], 16.iv.1915, G. van Dam and A. Roberts, 3 ♀ (TMSA 3095–3099); Lyttleton junction [25.8305°S 28.2080°E], 2.iv.1915, G. van Dam and A. Roberts, 3 ♀, 1 juv. (TMSA 3109–3112); Skinners Court, Pretoria [25.7461°S 28.2289°E], 22.iv.1915, G. van Dam and A. Roberts, 2 ♀, 3 juv. (TMSA 3113–3119); between Villieria and Derdepoort, Pretoria [25.7061°S 28.2597°E], 12.iv.1915, A. Roberts and G. van Dam, 1 ♀ (TMSA 3076). **Wonderboom Distr.:** Bon Accord Siding [25.6253°S 28.2031°E], 14.iv.1915, A. Roberts, 2 ♀, 1 abdomen (TMSA 3085, 3086); Pretoria North [25.6732°S 28.1693°E], 28.iv.1915, G. van Dam and A. Roberts, 2 ♀ (TMSA 3130, 3131); Rosslyn [25.6263°S 28.0893°E], 16.v.1913, G. van Dam, 10 ♀, 1 juv. (TMSA 3166–3176), 25.iv.1915, A. Roberts, 1 ♀ (TMSA 3127), 1 juv. (TMSA 3128), xii.1921, 1 ♀ (TMSA 6147); Witfontein, near Pretoria North [25.6596°S 28.1322°E], 28.iv.1915, G. van Dam and A. Roberts, 1 ♀ (TMSA 3132), 1 juv. (TMSA 3133).

DISTRIBUTION: *Stasimopus robertsi* is known from only four localities in the Pretoria District of Gauteng Province, South Africa, to which this species is presumed to be endemic (fig. 3).

HABITAT: The known locality records of *S. robertsi* fall within the Moot Plains Bushveld and Marikana Thornveld vegetation types (Mucina and Rutherford, 2006). The locality at Faerie Glen Nature Reserve comprises open woodland with red structured clay soils (Shortlands form), apparently derived from shale (fig. 1A).

CONSERVATION STATUS: Approximately 83% of the habitat in the known range of this species has been transformed by urban development, suggesting that this species may be threatened with extinction, but additional sampling is necessary to determine the full extent of its distribution and habitat requirements before a thorough conservation assessment is possible.

Stasimopus hewitti, new species

Figs. 2A, 4B, 5C, D, 10–15, tables 2, 3

Stasimopus robertsi Hewitt, 1915: 79 (part; female identifications uncertain and probably include misidentified conspecifics); 1916: 204 (part; *ibid.*).

TYPE MATERIAL: SOUTH AFRICA: Gauteng Prov.: Wonderboom Distr.: Holotype ♂ (TMSA 23988), 10 ♂, 1 ♀, 5 juv. paratypes (TMSA 23989), 3 ♂, 1 ♀ paratypes (AMNH), Roodeplaat Dam Nature Reserve, ca. 10 km ENE of Pretoria, area W of Aqua and N of main road, 25°37'55.5"S 28°21'25.1"E, 1235 m, 17.iii.2008–13.ii.2009, I. Engelbrecht and GDACE field staff, pitfall trap arrays, flat, S slope, *Acacia–Cymbopogon/Setaria* short open woodland, limited embedded dolerite and shale rocks (33–50%), IE09-018.

DIAGNOSIS: Adult males of *S. hewitti*, n. sp., may be distinguished from those of all other species of *Stasimopus*, except *S. filmeri*, n. sp., and *S. griswoldi*, n. sp., by the presence of spinules in the scopulae on the ventral surfaces of the tarsi of the first two pairs of legs (fig. 12F). They may be distinguished from adult males of *S. filmeri*, n. sp., and *S. griswoldi*, n. sp., by the following combination of characters: smaller size (table 2); pedipalps reaching the proximal third or half of the metatarsus of leg I when both are extended forward; lower spine counts on the tibiae and metatarsi of the first two pairs of legs (table 3); spines on the metatarsus of leg I predominantly situated retroventrally (some situated ventrally or proventrally in particular specimens, fig. 12C–E); tibia of leg I sublinear in lateral profile (fig. 12C); metatarsus and tarsus of leg IV, coloration paler than preceding segments; book lung covers yellow. Adult males, females and immature stages of *S. hewitti*, n. sp., may be distinguished from those of *S. filmeri*, n. sp., by the absence of a prominent, posteriorly inclined hornlike protuberance of the carapace fovea (figs. 10C, 11C). Adult females and immature stages of *S. hewitti*, n. sp., are morphologically indistinguishable from those of several other *Stasimopus* species.

ETYMOLOGY: This species is named in honor of the late John Hewitt, former director of the Albany Museum, Grahamstown, who collected the first male of the species (TMSA 6317) in 1909, in recognition of his contributions to southern African arachnology.

DESCRIPTION: Based on the type series.

General: ♀: Medium-sized spiders (carapace length, 8–12 mm).

Color: ♂: Carapace black. Legs I–IV, metatarsi and tarsi red, IV occasionally black proximally; rest of legs and pedipalps black. Abdomen, ventral and lateral surfaces black, dorsal surface powder blue with bases of epiantrous fusculae black; book lung covers yellow; genital plate, between first pair of book lungs, yellow or brown; spinnerets paler than abdomen, light gray in color.

Carapace: ♂: Cephalic region, lateral surfaces slightly papillate in texture (fig. 10A, C).

Postocular carinae distinct, smooth. ♀ (fig. 11A, C): as in *S. robertsi*.

Ocelli: ♂: Ocelli relatively widely separated (fig. 5C). Anteromedian and anterolateral ocelli subequal in size, anteromedian ocelli situated half their diameter to one diameter apart, anterolateral ocelli situated approximately one anteromedian ocular diameter from anteromedian ocelli. Posteromedian ocelli situated one anteromedian ocular diameter posterior to anterolateral ocelli. Posterolateral ocelli situated slightly less than one anteromedian ocular diameter from and slightly posterolateral to posteromedian ocelli. ♀: Anteromedian ocelli small, approximately half diameter of anterolateral ocelli, situated approximately two anteromedian ocular diameters apart (fig. 5D). Anterolateral ocelli located approximately one anteromedian ocular diameter from anteromedian ocelli. Posteromedian ocelli round, situated posterior or slightly posterolateral to anterolateral ocelli, slightly larger than anteromedian ocelli, but smaller than anterolateral ocelli. Posterolateral ocelli situated lateral to posteromedian ocelli, approximately one anteromedian ocular diameter from and approximately equal in size to posteromedian ocelli.

Sternum, labium, and maxillae: ♂, ♀ (figs. 10B, 11B): as in *S. robertsi*.

Pedipalps: ♂ (fig. 12A, B): Pedipalps elongated, reaching proximal third or half of leg I metatarsus when both extended forward. Tibia slightly swollen, prolateral margin sublinear, retrolateral margin convex. Embolus long and slender, bulb width approximately equal to width of tibia.

Legs: ♂: Legs I and II (fig. 12C–F) tibia, lateral and ventral surfaces moderately spinose along entire length of segment; metatarsus, prolateral and ventral surfaces spinose along entire length of segment, more densely so retroventrally; tarsus short, slightly swollen, ventral surfaces with scopulae, not extending entire length of segment, spinules present among scopular setae, spines adjacent to scopulae prolaterally, absent retrolaterally. Legs I–III tarsi, paired claws each with sigmoid row of well-developed teeth extending approximately two-thirds length of claw (fig. 16B). Legs III and IV (fig. 13A–C) tarsus moderately swollen. Leg IV (fig. 13D–F) tarsi, paired claws each with two or three long teeth proximally, and smaller teeth extending more than half length of claw (fig. 16C). ♀: Legs I and II (fig. 14A–C) tibia and metatarsus, retroventral spines not elongated; metatarsus, prodorsal surface with short, erect setae along entire length, retrodorsal surface with patch of spinules extending from proximal margin to beyond midpoint of segment, becoming more sparse distally. Leg III (fig. 14A–C) as in *S. robertsi*. Leg IV (fig. 15D, E) metatarsus with preening comb, comprising four or five elongated slender spines retroventrally on distal margin.

Abdomen: ♀ (fig. 14D): As in *S. robertsi*.

Spermathecae: Entire, with inflated terminus (fig. 4B).

ADDITIONAL MATERIAL: SOUTH AFRICA: Gauteng Prov.: Krugersdorp Distr.: Hartebeeshoek Satellite Station [25.8852°S 27.7094°E], 5.iv.1995, C. Potgieter, 1 ♂ (TMSA 18835). **Pretoria Distr.:** Eldoraigne, Pretoria [25.8452°S 28.1524°E], 20.i.1980, A. Bergman, in house, 1 ♂ (NCA 81/627); Gezina, Pretoria [25.7212°S 28.2055°E], 15.iii.1913, G. van Dam, 1 ♂ (TMSA 6314); Pretoria [25.7347°S 28.1932°E], 1909, J. Hewitt, 1 ♂ (TMSA 6317), 15.iii.2001, P. Wagemaker, 1 ♂ (NCA 2002/156); Pretoria, Plot 6, Olympus [25.8094°S 28.3471°E], 8.i.2002, L. Wilson, 1 ♂ (TMSA 21383); Swavelpoort, near the Willows, E of Pretoria [25.8564°S 28.3881°E], 6.iii.1970, C.K. Brain, 1 ♂ (TMSA 9589). **Randburg Distr.:** Randtjiesfontein/Grand Central Airport, SW of

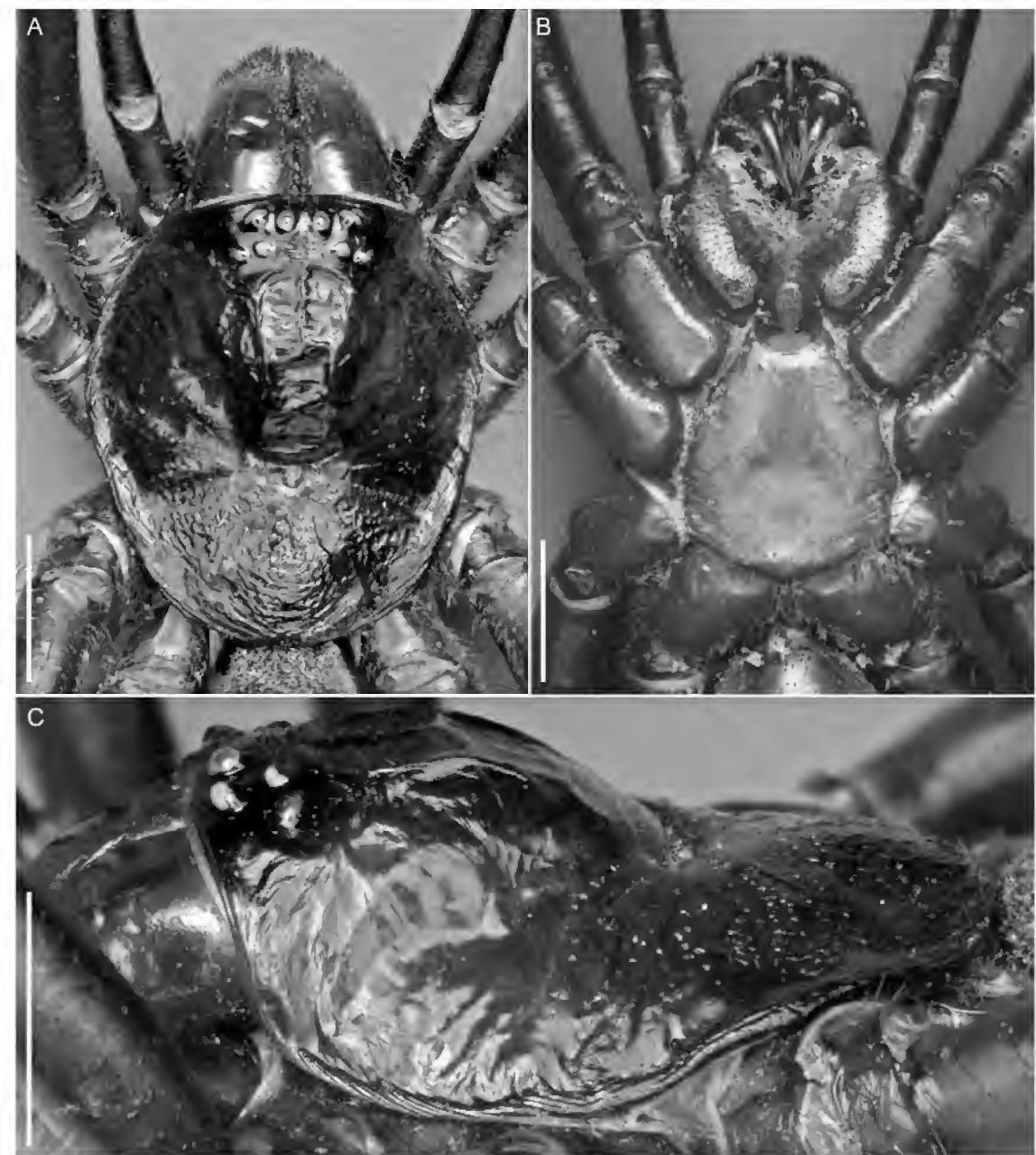


FIGURE 10. *Stasimopus hewitti*, n. sp., paratype ♂ (TMSA 23989). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

airport complex, near R101, 25°59'50.1"S 28°08'16.1"E, 10.i.2007, P Roos, pitfalls, PR114005, 2 ♂ (TMSA 23990), 25°59'43.8"S 28°08'24.8"E, 10.i.2007, P Roos, pitfalls, PR114004, 2 ♂ (TMSA 23991). *Wonderboom Distr.*: Roodeplaat, 14 mi. NE of Pretoria [25.6117"S 28.3613"E], 20.iv.1915, G. van Dam and A. Roberts, 2 ♀, 4 juv. (TMSA 3154-3159), 24.v.1915, G. van Dam, 1 ♀ (TMSA

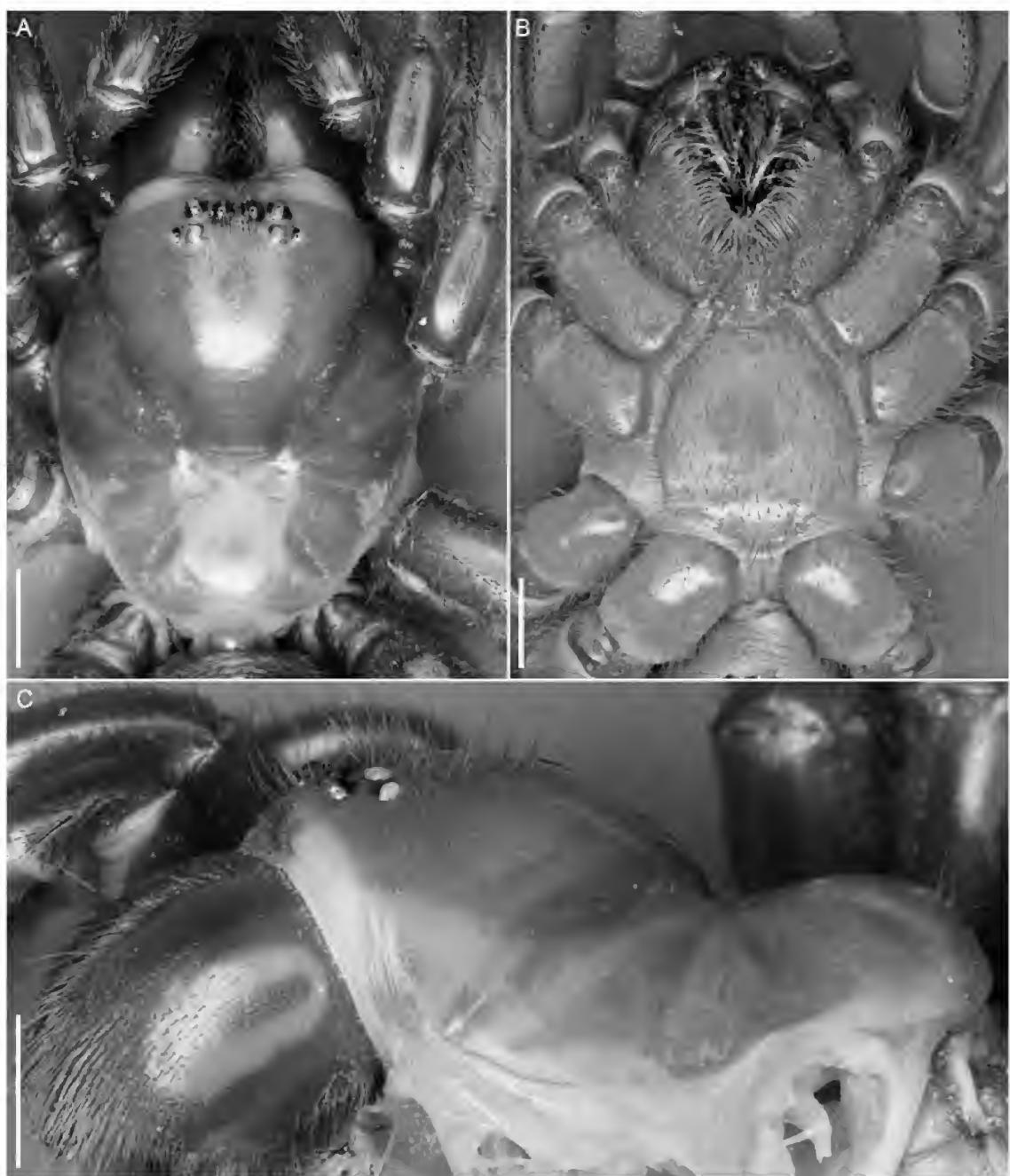


FIGURE 11. *Stasimopus hewitti*, n. sp., ♀ (TMSA 3154). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

3150), 1 juv. (TMSA 3151); Roodeplaat Research Station [25.6085°S 28.3542°E], 10.xi.2003, I. Jacobs, in house, 1 ♂ (NCA 2003/1676); Tswaing Crater [25.4114°S 28.0858°E], 24–28.xi.2003, K. Manamela, 1 ♂ (TMSA 22733); Zeekoegat, near Roodeplaat [25.6309°S 28.3510°E], 1.iv.1915, G. van Dam and A. Roberts, 4 ♀, 1 juv. (TMSA 3160–3163).

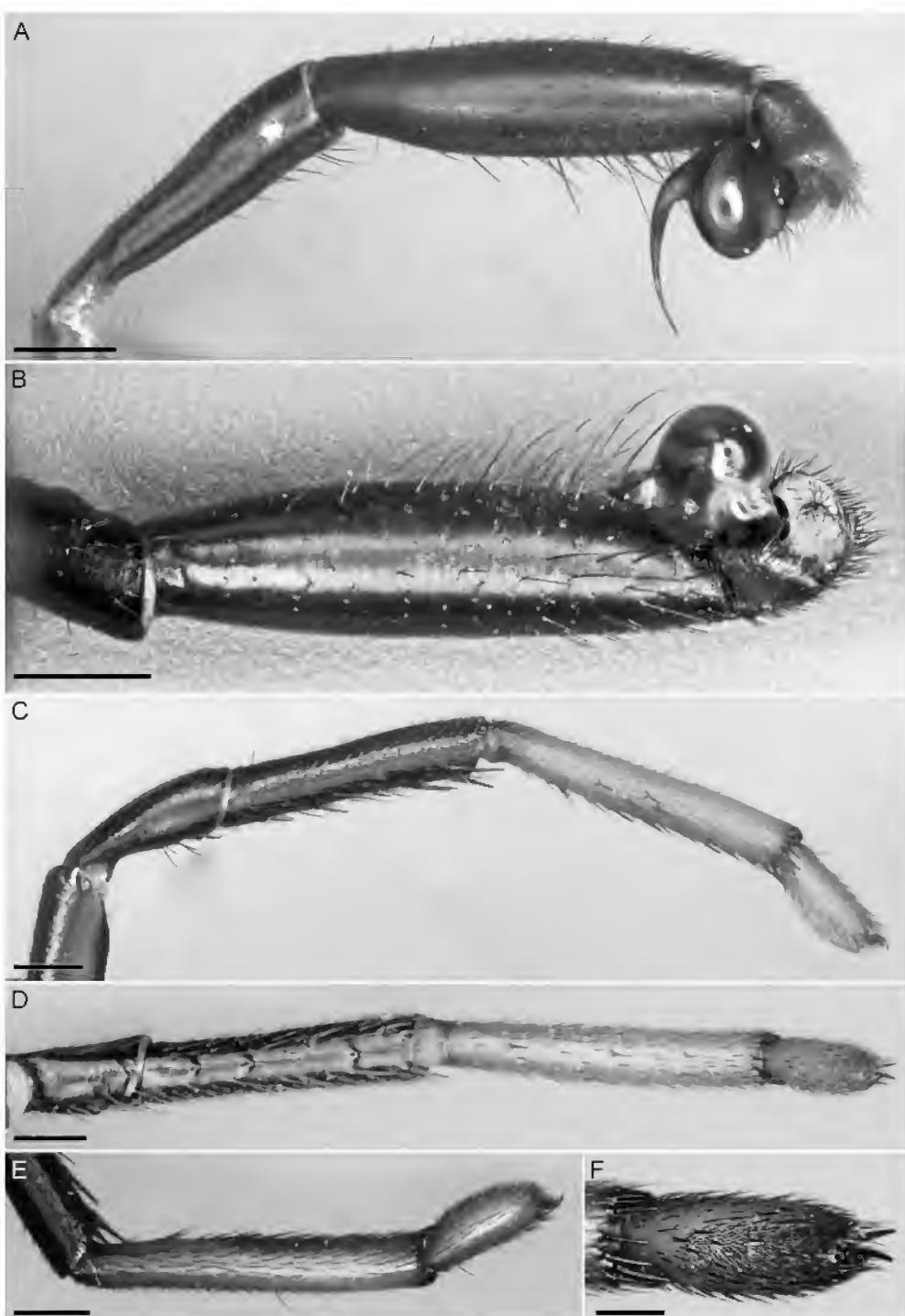


FIGURE 12. *Stasimopus hewitti*, n. sp., paratype ♂ (TMSA 23989). A. Pedipalp patella, tibia, embolus, pro-lateral aspect. B. Pedipalp tibia, embolus, ventral aspect. C, D. Leg I patella, tibia, metatarsus, tarsus. C. Prolateral aspect. D. Ventral aspect. E. Leg I metatarsus, tarsus, retrolateral aspect. F. Leg I tarsus, ventral aspect. Scale: A-E, 1 mm. F, 0.5 mm.

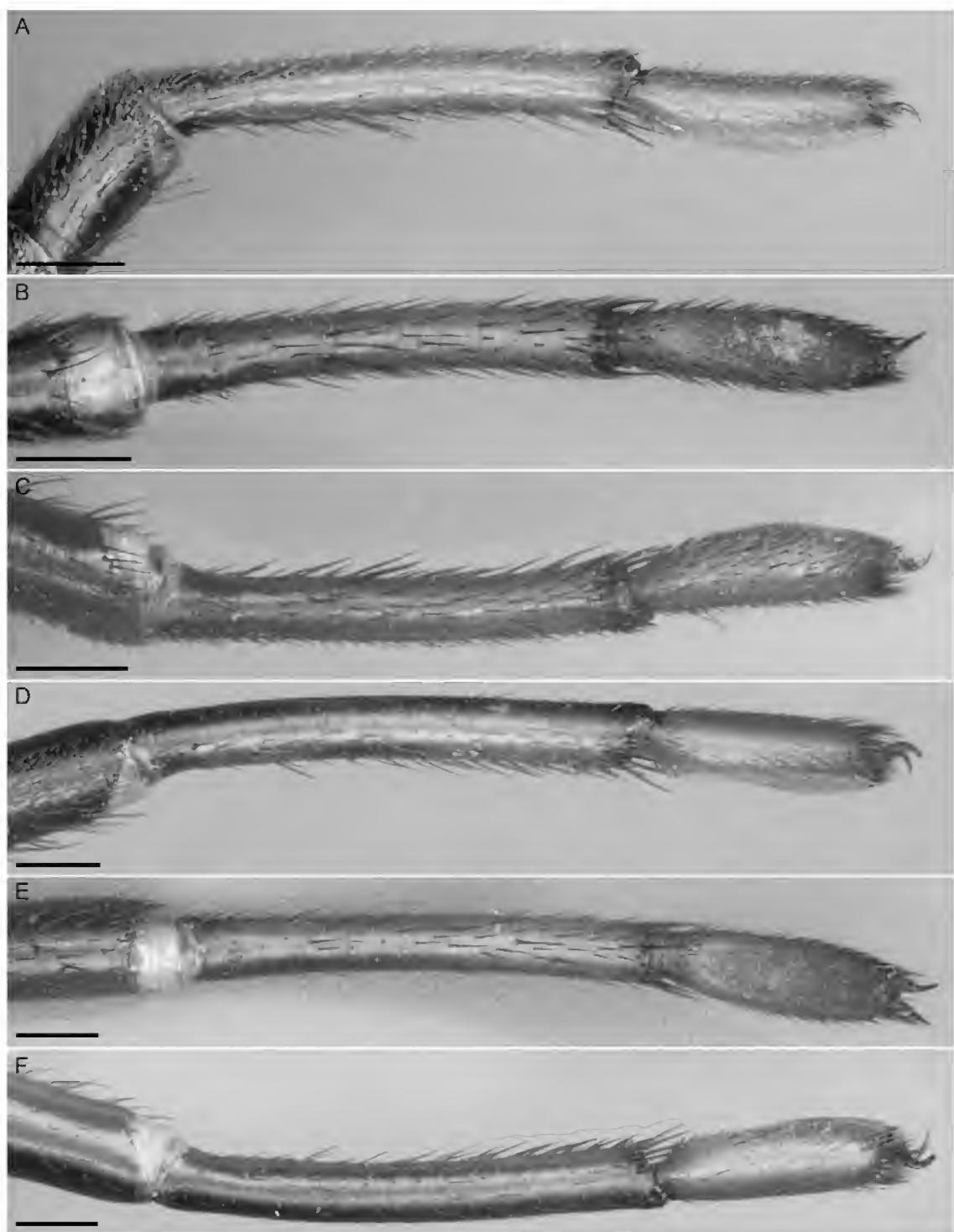


FIGURE 13. *Stasimopus hewitti*, n. sp., paratype ♂ (TMSA 23989). A-C. Leg III metatarsus, tarsus. D-F. Leg IV metatarsus, tarsus. A, D. Prolateral aspect. B, E. Ventral aspect. C, F. Retrolateral aspect. Scale: 1 mm.

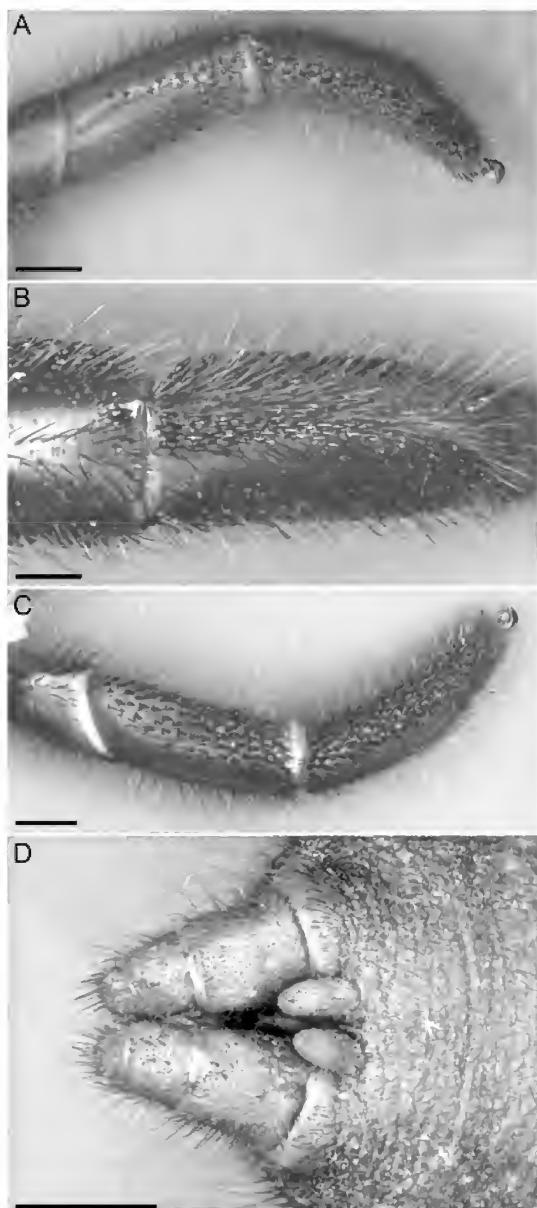


FIGURE 14. *Stasimopus hewitti*, n. sp., ♀ (TMSA 3154), leg I. A. Tibia, metatarsus, tarsus, prolateral aspect. B. Tibia, metatarsus, dorsal aspect. C. Tibia, metatarsus, tarsus, retrolateral aspect. D. Spinnerets, ventral aspect. Scale: A–C, 1 mm. D, 0.5 mm.

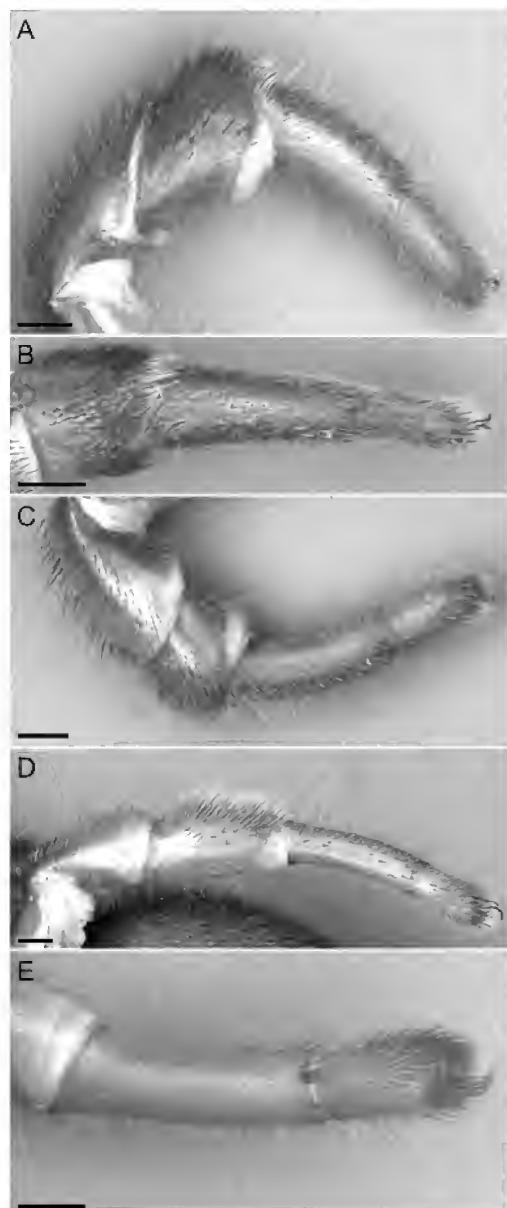


FIGURE 15. *Stasimopus hewitti*, n. sp., ♀ (TMSA 3154). A. Leg III patella, tibia, metatarsus, tarsus, prolateral aspect. B. Leg III tibia, metatarsus, tarsus, dorsal aspect. C. Leg III patella, tibia, metatarsus, tarsus, retrolateral aspect. D. Leg IV patella, tibia, metatarsus, tarsus, prolateral aspect. E. Leg IV metatarsus, tarsus, retrolateral aspect. Scale: 1 mm.

DISTRIBUTION: *Stasimopus hewitti*, n. sp., has been recorded from several localities in the Krugersdorp, Pretoria, Randburg and Wonderboom districts of Gauteng Province, South Africa (fig. 3), but additional sampling may reveal that it is more widespread in the northern parts of Gauteng Province and may extend into adjacent areas of neighboring provinces. The predominance of records around Pretoria reflects a peak of sampling by Transvaal Museum staff in the early 1900s.

HABITAT: The species occurs in a wide range of habitats and soil types, and appears to be absent only from very sandy soils (fig. 1B). Although most of the known records occur in the Marikana Thornveld vegetation type (Mucina and Rutherford, 2006), it has also been recorded from Andesite Mountain Bushveld, Carletonville Dolomite Grassland, Central Sandy Bushveld, Egoli Granite Grassland, Gold Mountain Bushveld, and Moot Plains Bushveld.

CONSERVATION STATUS: Approximately 50% of the habitat in the known range of this species has been transformed. It has been recorded in two protected areas, Roodeplaat Dam Nature Reserve and Tswaing Nature Reserve, and probably also occurs in the Rhenosterspruit and Hennops Valley Conservancies.

***Stasimopus griswoldi*, new species**

Figs. 2C, D 4C, E, F, 18–20, tables 2, 3

TYPE MATERIAL: SOUTH AFRICA: North West Prov.: *Brits Distr.*: Holotype ♂ (TMSA 23999), 8 ♂ paratypes (TMSA 24000), 3 ♂ paratypes (AMNH), Farm Hartebeestfontein 473, N side of Magalies River, ca. 8 km due NE of Hekpoort, patch of woodland around farm workers' dwellings next to dust road, 25°50'06.5"S 27°39'14.9"E, 1255 m, 18–19.iii.2010, I. Engelbrecht and GDACE field staff, pitfall trapping (fenced arrays with 21 traps), open woodland with red, structured clay soil, IE10-013; 2 ♂, 3 ♀, immature paratypes (TMSA 24001), paratype ♀ (AMNH), Kommandonek [S slopes of Magaliesberg at Kommandonek, near Hartebeespoort Dam], 25.74775°S 27.81705°E, trapping 25.iv–23.v.2007, hand collecting 25.iv–31.v.2007, P. Hawkes, pitfall trapping and hand collecting, bushveld, 1 ♀ with immature in burrow.

DIAGNOSIS: Adult males of *S. griswoldi*, n. sp., may be distinguished from those of all other species of *Stasimopus*, except *S. filmeri*, n. sp., and *S. hewitti*, n. sp., by the presence of spinules in the scopulae on the ventral surfaces of the tarsi of the first two pairs of legs (fig. 19F). They may be distinguished from adult males of *S. hewitti*, n. sp., by the following combination of characters: larger size (table 2); pedipalps reaching distal end of leg I when both extended forward; higher spine counts on tibia and metatarsus of first two pairs of legs (table 3); spines on metatarsus of leg I distributed over ventral and ventrolateral surfaces (fig. 19C–E); tibia of leg I distinctly convex proximally in lateral profile (fig. 19C); metatarsus of leg IV, coloration as dark as preceding segments (fig. 20D–F); book lung covers dark brown. Adult males, females, and immature individuals of *S. griswoldi*, n. sp., may be distinguished from those of *S. filmeri*, n. sp., by the absence of a prominent, posteriorly inclined hornlike protuberance of the carapace fovea (figs. 17A, C, 18A, C). In other respects, the two species appear to be morphologically identical. Adult females and immature individuals of *S. griswoldi*, n. sp., are morphologically indistinguishable from several other *Stasimopus* species.

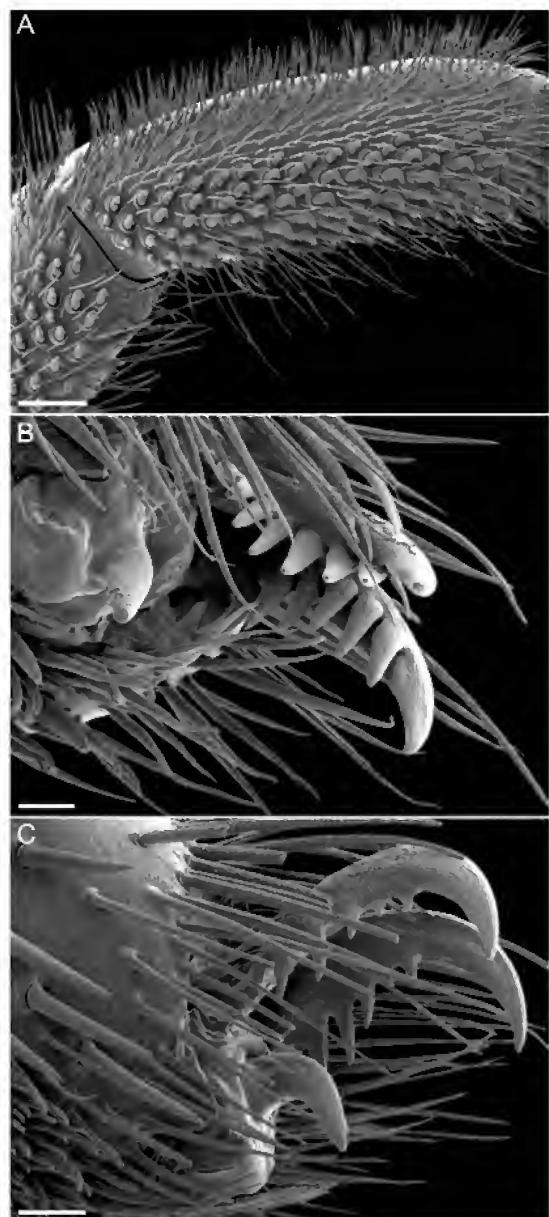


FIGURE 16. SEM images of *Stasimopus* Simon, 1892, species. A. *Stasimopus* sp., ♀ (TMSA 23995), leg I tibia, metatarsus, retrolateral aspect, showing curved spines. B, C. *Stasimopus hewitti*, n. sp., paratype ♂ (TMSA 23989). B. Leg I tarsus, distal portion, ventral aspect, showing tarsal claws. C. Leg IV tarsus, distal portion, ventral aspect, showing tarsal claws. Scale: A. 500 µm. B. 50 µm. C. 100 µm.

ETYMOLOGY: This species is named in honor of Charles Griswold, Schlinger Curator of Arachnology at the California Academy of Sciences, San Francisco, for his contributions to the systematics of African mygalomorph spiders.

DESCRIPTION: Based on the type series.

Color: ♂: Chelicerae uniformly black. Leg III metatarsus black proximally; leg IV metatarsus mostly black, becoming paler distally. Book lung covers yellow or black; anterior pair always pale, posterior pair black in some specimens; genital plate, between anterior book lungs, paler than rest of abdomen or similar in color to pale book lung coverings, creating pale band across anteroventral part of abdomen.

Carapace: ♂: Cephalic region, lateral surfaces slightly papillate in texture (fig. 17A, C). Postocular carinae distinct, smooth, sometimes with pleated appearance. Thoracic region, surfaces papillate. ♀: Carapace length, 9–11 mm. Cephalic region of some specimens sloping more steeply posteriorly to fovea (fig. 18A, C) than in *S. hewitti*, n. sp., and *S. robertsi*.

Ocelli: ♂: Ocelli relatively smaller and more widely separated than in *S. hewitti*, n. sp., with anteromedian ocelli three diameters apart, anterolateral ocelli one diameter from anteromedian ocelli, and posterolateral ocelli two diameters from posteromedian ocelli (fig. 5E). ♀: Ocelli relatively smaller and more widely separated in large specimens than in *S. hewitti*, n. sp., but otherwise identical in specimens of similar size (fig. 5F). Anteromedian ocelli small, approximately half diameter of anterolateral ocelli, situated approximately two anteromedian ocular diameters apart. Anterolateral ocelli located approximately one anteromedian ocular

diameter from anteromedian ocelli. Posteromedian ocelli round, situated posterior or slightly posterolateral to anterolateral ocelli, slightly larger than anteromedian ocelli, but smaller than anterolateral ocelli. Posterolateral ocelli situated lateral to posteromedian ocelli, approximately one anteromedian ocular diameter from and approximately equal in size to posteromedian ocelli.

Sternum, labium and maxillae: ♂, ♀ (figs. 17B, 18B): as in *S. robertsi*.

Pedipalps: ♂ (fig. 19A–B): Pedipalps elongated, reaching end of leg I when both extended forward. Tibia slightly swollen, shallowly concave in lateral profile. Cymbium without spines. Bulb simple, pyriform, subequal in width to cymbium, maximum width approximately equal to width of tibia, embolus long, slender, cylindrical, gently curved and gradually tapering.

Legs: ♂: Leg I patella, ventral and lateral surfaces without spines or with few spines distally; tibia convex proximally in lateral profile. Legs I and II (fig. 19C–F) tibia and metatarsus, prolateral and ventral surfaces densely and evenly spinose; tarsi, lateral surfaces densely spinose, spinules present within ventral scopulae, paired claws each with sigmoid row of well-developed teeth extending approximately two-thirds length of claw. Leg III patella, retrolateral margin occasionally with few short spines distally; tibia, retrodorsal and, in some specimens, ventral surfaces spinose; metatarsus (fig. 20A–C), ventral and lateral surfaces and distal margin with spines more robust than in *S. hewitti*, n. sp. Leg IV patella, dorsal and prolateral surfaces with patch of spinules extending beyond midpoint of segment; tibia, proventral surface with slender spines; metatarsus (fig. 20D–F), ventral surface with spines more robust than in *S. hewitti*, n. sp. Legs III and IV tarsi, paired claws each with two or three long teeth proximally, and smaller teeth extending more than half the length of claw. ♀: Legs I and II tibia and metatarsus, retroventral spines not elongated; metatarsus, prodorsal surface with short, erect setae along entire length, retrodorsal surface with patch of short, straight, slender spines, extending from proximal margin to beyond midpoint of segment, becoming more sparse distally. Leg IV metatarsus with preening comb comprising four or five elongated slender spines, on distal retroventral margin.

Spermathecae: Entire, with inflated terminus (fig. 4C).

ADDITIONAL MATERIAL: SOUTH AFRICA: North West Prov.: *Brits Distr.*: Farm Hartebeestfontein 473, N side of Magalies River, ca. 8 km due NE of Hekpoort, patch of woodland around farm workers' dwellings next to dust road, 25°50'06.5"S 27°39'14.9"E, 1255 m, 15.x.2009, I. Engelbrecht and GDACE field staff, soil scraping, closed woodland with red, structured clay soil, IE09-061, 5 juv. (TMSA 24002), same data except "15.viii.2011, IE11-009," 4 ♀, 7 juv. (TMSA 24025).

DISTRIBUTION: *Stasimopus griswoldi*, n. sp., appears to be restricted to the valley between the Magaliesberg and Skurweberg mountain ranges, north of the Magalies River and west of the Crocodile River (fig. 3). It has thus far only been recorded from the Brits District of North West Province, but probably also occurs in adjacent parts of Gauteng Province.

HABITAT: The known locality records of this species fall within the Moot Plains Bushveld vegetation type (Mucina and Rutherford, 2006), characterized by mixed woodland with *Aca-*

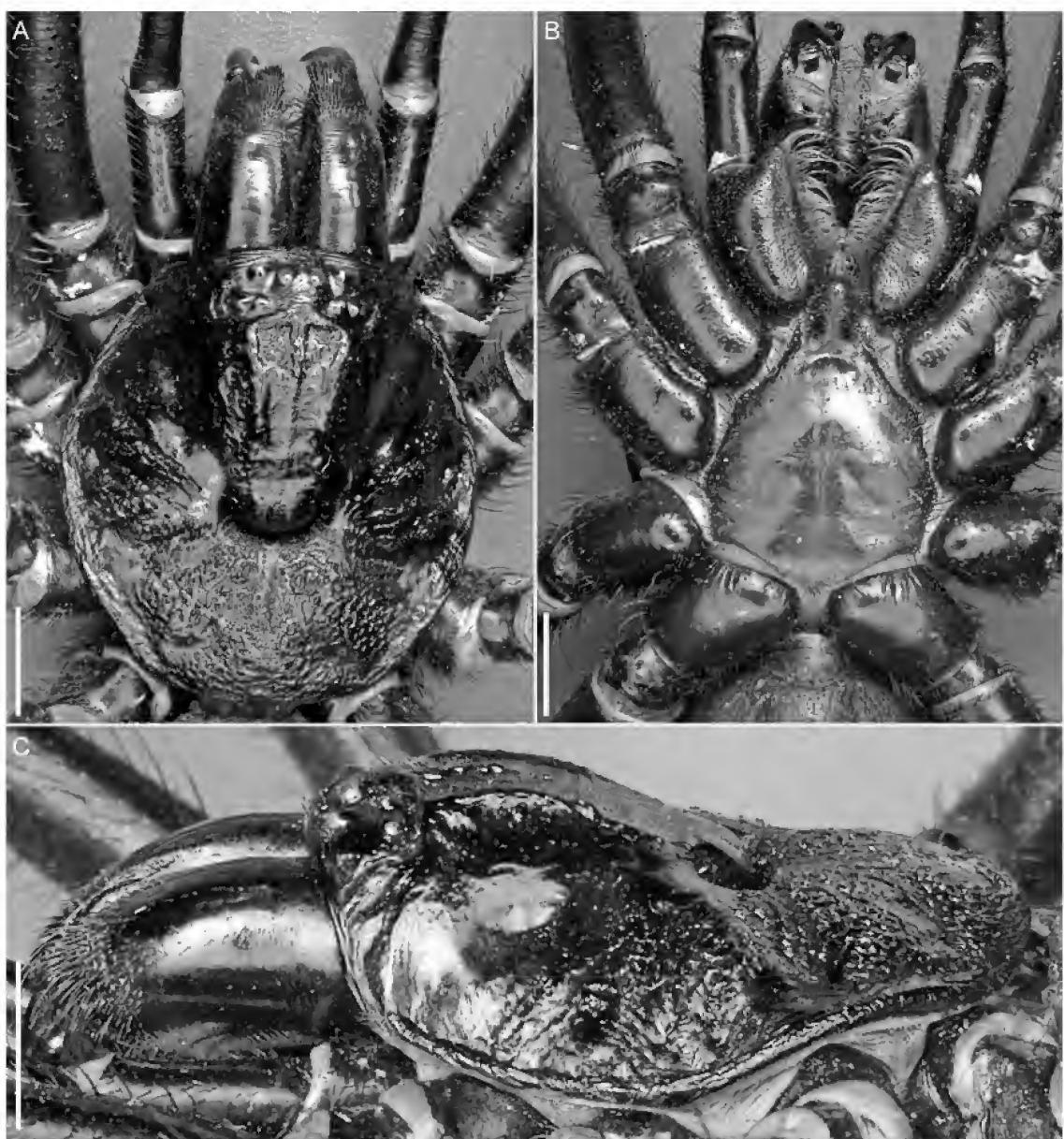


FIGURE 17. *Stasimopus griswoldi*, n. sp., ♂ (TMSA 24000). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

cia karroo Hayne, *Acacia nilotica* (Linnaeus), and *Rhus lancea* Linnaeus (fig. 1C). The soils in the area are mostly red structured clays (Shortlands form) and shallow rocky soils (Glenrosa and Mispah forms) with high clay content, but to date the species has only been recorded on the former.

CONSERVATION STATUS: Approximately 46% of the habitat in the valley inhabited by *S. griswoldi*, n. sp., has been transformed, primarily by agriculture. The species appears to persist on relatively small patches of natural habitat, especially in rocky areas unsuitable for agricul-

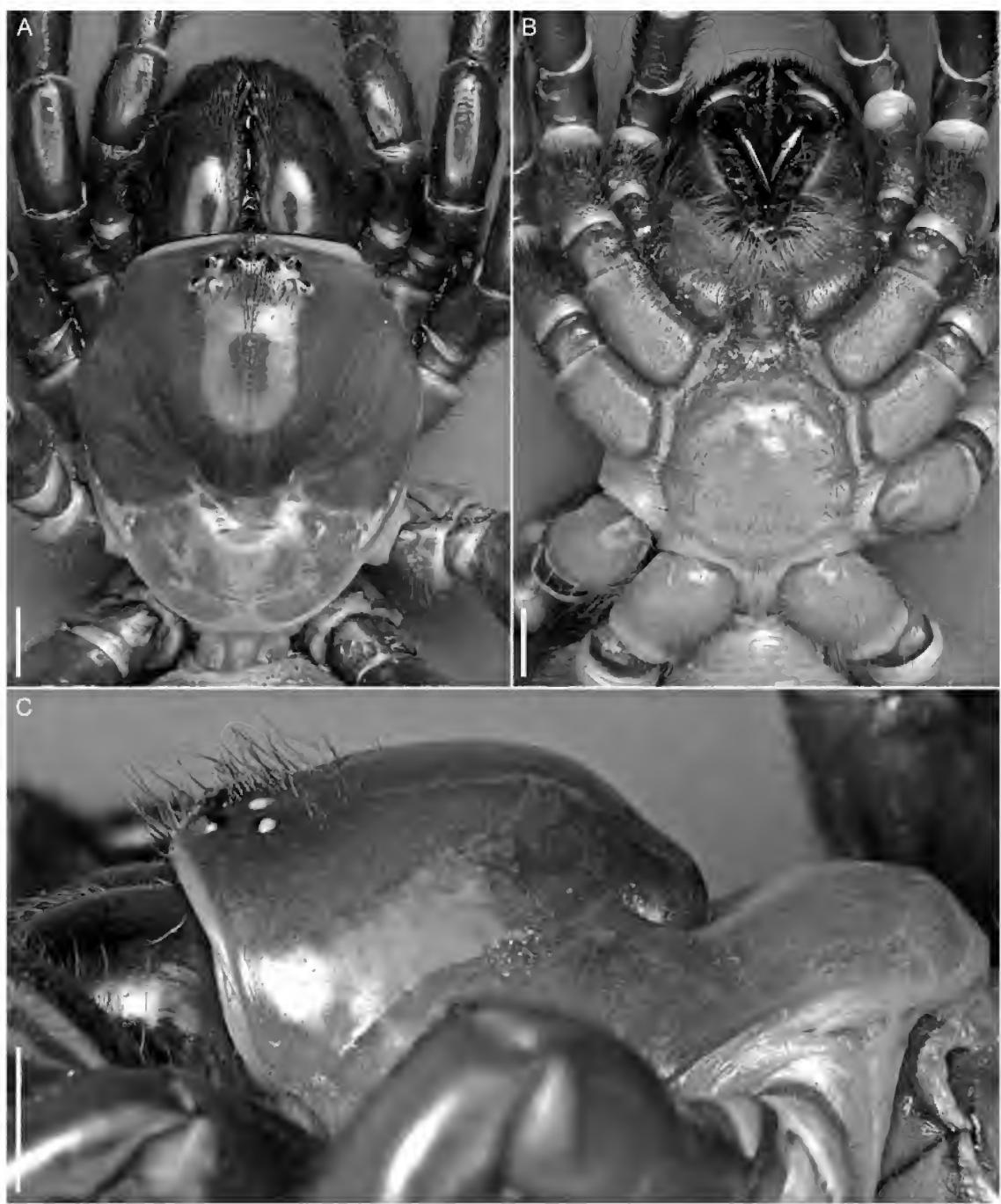


FIGURE 18. *Stasimopus griswoldi*, n. sp., adult ♀ (TMSA 24001). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale 2 mm.

ture. Habitat destruction associated with urban and infrastructural developments spreading westward from the recreational areas around Hartebeespoort Dam represents an additional threat to the species.

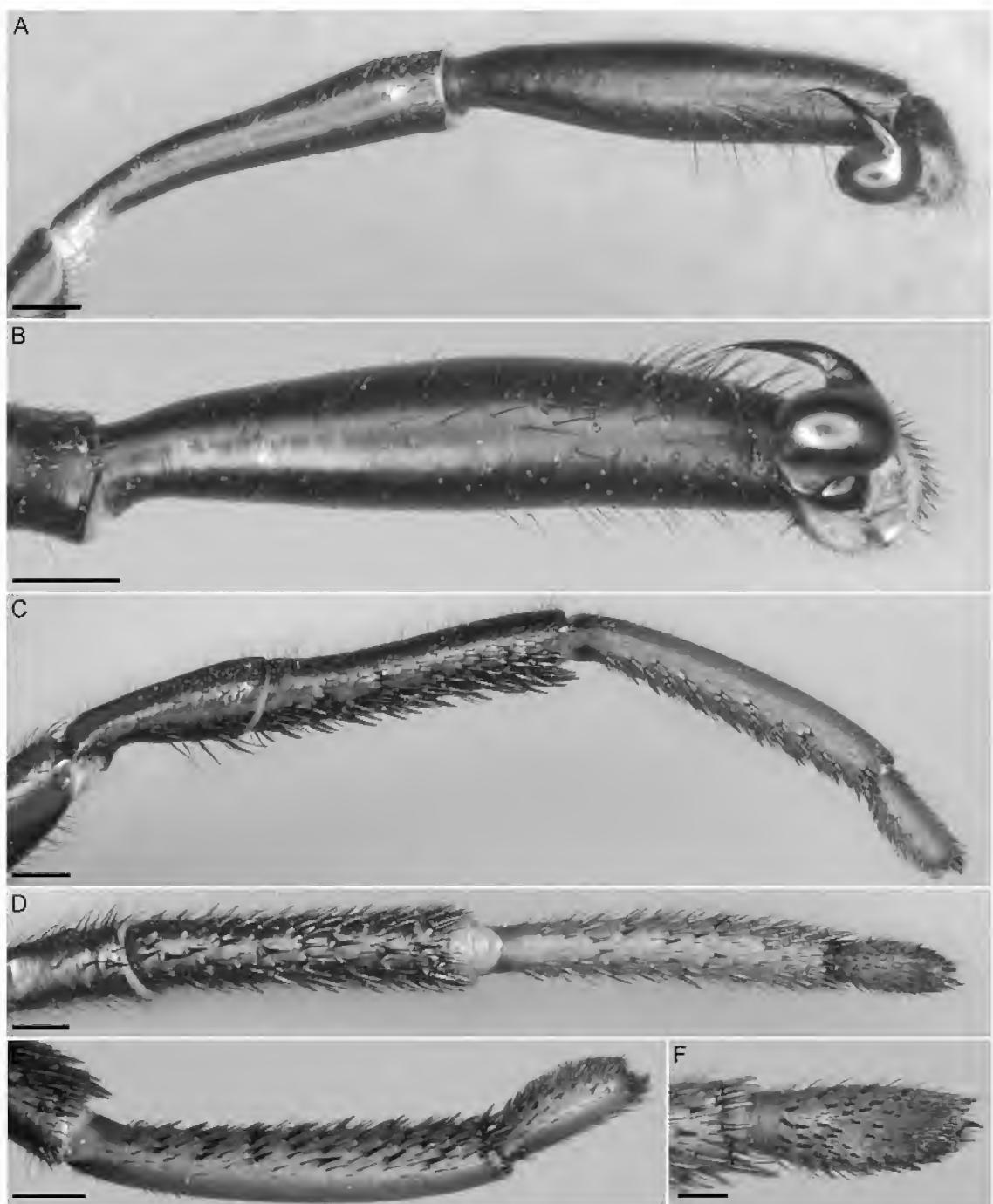


FIGURE 19. *Stasimopus griswoldi*, n. sp., ♂ (TMSA 24000). A. Pedipalp patella, tibia, embolus, prolateral aspect. B. Pedipalp tibia, embolus, ventral aspect. C, D. Leg I patella, tibia, metatarsus, tarsus. C. Prolateral aspect. D. Ventral aspect. E. Leg I metatarsus, tarsus, retrolateral aspect. F. Leg I tarsus, ventral aspect. Scale: A-E. 1 mm. F. 0.5 mm.

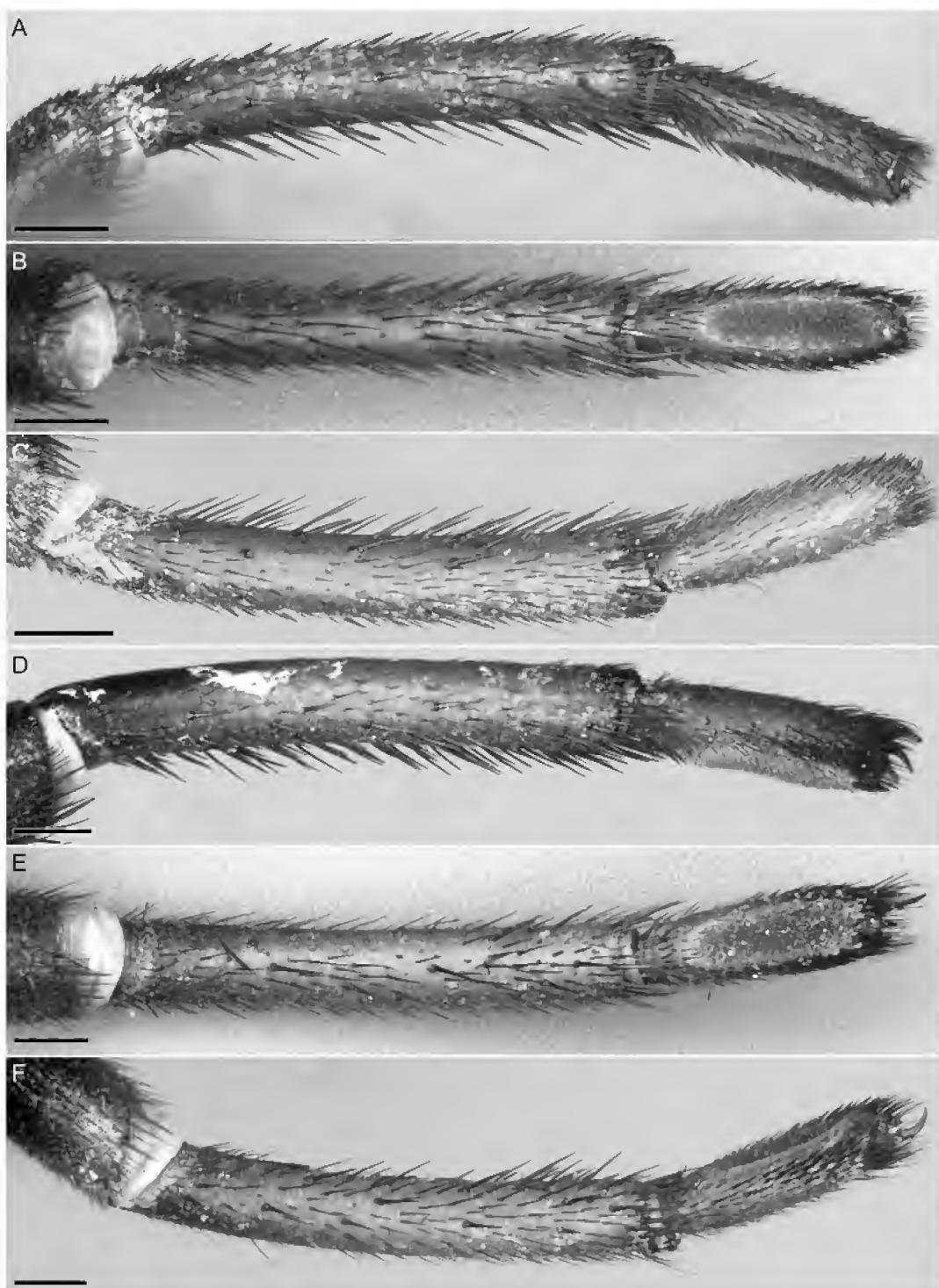


FIGURE 20. *Stasimopus griswoldi*, n. sp., ♂ (TMSA 24000). A-C. Leg III metatarsus, tarsus. D-F. Leg IV metatarsus, tarsus. A, D. Prolateral aspect. B, E. Ventral aspect. C, F. Retrolateral aspect. Scale: 1 mm.

Stasimopus filmeri, new species
Figs. 2E, F, 4D, 5G, H, 21–24, tables 2, 3

TYPE MATERIAL: SOUTH AFRICA: Gauteng Prov.: Krugersdorp Distr.: Holotype ♂ (TMSA 23992), paratype ♂ (TMSA 23993), Mokoya Lodge, Farm Hartebeestfontein 427JQ, Hartebeestfontein Conservancy, ca. 5 km due NE of Hekpoort, wooded strip W of entrance road, 25°50'49.0"S 27°39'28.7"E, 1250 m, 29.iv.2009, I. Engelbrecht and GDACE field staff, pitfall trap arrays, flat slope, tall open *Acacia* woodland, loose quartzite (5%–20%) and shale (75–95%) rocks, hard granular, grayish-brown sandy loam soil, with rock fragments (75%–95%), IE09-043; 1 ♂ paratype (TMSA 23994), 3 ♂ paratypes (AMNH), same data except "4–19.iii.2010 ... IE10-034," 1 ♀, 1 juv. paratypes (AMNH), same data except "2–4.ii.2010 ... IE10-032"; 1 subad. ♀ paratype (TMSA 23996), same data except "29.ix.2009, coincidental encounter while digging in pitfall traps, IE09-065"; 1 juv. paratype (TMSA 23997), same data except "11.xii.2009 ... IE09-107"; 2 ♀, 3 juv., 1 egg case (TMSA 23998), Farm Hartebeestfontein 472, ca. 5 km due NE of Hekpoort, at junction of dust road crossing river and dust road heading to Mokoya Lodge/Hekpoort, 25°50'43.6"S 27°40'01.2"E, 1243 m, 15.x.2009, I. Engelbrecht and GDACE field staff, soil scraping, flat, open woodland with red, structured clay soil, both ♀♀ with egg cases in burrows, one consumed egg case before preservation, IE09-060.

DIAGNOSIS: *Stasimopus filmeri*, n. sp., may be distinguished from all known species of *Stasimopus* by the presence of a prominent, posteriorly inclined hornlike protuberance of the carapace fovea, present in both sexes and immatures of all sizes (figs. 21A, C, 22A, C). This structure extends at least to the posterior margin of the carapace and, in some females and juveniles, almost to the anterior surface of the abdomen. Adult males of *S. filmeri*, n. sp., may be further distinguished from those of all other *Stasimopus* species, except *S. hewitti*, n. sp., and *S. griswoldi*, n. sp., by the presence of spinules in the scopulae on the ventral surfaces of the tarsi of the first two pairs of legs (fig. 23F). They may be further distinguished from adult males of *S. hewitti*, n. sp., by the following combination of characters: larger size (table 2); pedipalps reaching distal end of leg I when both extended forward; higher spine counts on tibia and metatarsus of first two pairs of legs (table 3); tibia of leg I distinctly convex in lateral profile (fig. 23C). Except for the foveal protuberance, *S. filmeri*, n. sp., and *S. griswoldi*, n. sp., appear to be morphologically identical.

ETYMOLOGY: This species is named in honor of the late Martin Filmer, former chairman of the Spider Club of Southern Africa, who first recognized this species as new to science, and published a photograph of it in his book on southern African spiders (Filmer, 1997: 87), in recognition of his role in fostering arachnology in South Africa.

DESCRIPTION: As for *S. hewitti*, n. sp., with the following differences.

Color: ♂: Chelicerae uniformly black. Leg III metatarsus black proximally; leg IV metatarsus mostly black, becoming paler distally. Book lung covers yellow or black; anterior pair pale, posterior pair black in some specimens; genital plate, between anterior book lungs, paler than rest of abdomen or similar in color to pale book lung coverings, creating pale band across anteroventral part of abdomen. ♀: Carapace cephalic region darker in very large specimens,

rendering infuscation around ocelli indistinct.

Carapace: ♂, ♀: Fovea with prominent, posteriorly inclined hornlike protuberance extending at least to posterior margin of carapace and, occasionally, almost to anterior surface of abdomen (figs. 21A, C, 22A, C). ♂: Cephalic region, lateral surfaces with slight papillate texture (fig. 21A, C). Postocular carinae distinct, smooth, with pleated appearance. ♀: Carapace length, 11–12 mm.

Ocelli: ♂: Ocelli relatively smaller and more widely separated than in *S. hewitti*, n. sp., with anteromedian ocelli three diameters apart, anterolateral ocelli one diameter from anteromedian ocelli, and posterolateral ocelli two diameters from posteromedian ocelli (fig. 5G). ♀: Anteromedian ocelli small, approximately half diameter of anterolateral ocelli, situated approximately two anteromedian ocular diameters apart (fig. 5H). Anterolateral ocelli located approximately one anteromedian ocular diameter from anteromedian ocelli. Posteromedian ocelli round, situated posterior or slightly posterolateral to anterolateral ocelli, slightly larger than anteromedian ocelli, but smaller than anterior lateral ocelli. Posterolateral ocelli situated lateral to posteromedian ocelli, approximately one anteromedian ocular diameter from and approximately equal in size to posteromedian ocelli.

Sternum, labium, and maxillae: ♂, ♀ (figs. 21B, 22B): As in *S. robertsi*.

Pedipalps: ♂ (fig. 23A, B): Pedipalps elongated, reaching end of leg I when both extended forward. Tibia slightly swollen, shallowly concave in lateral profile. Cymbium without spines. Bulb simple, pyriform, subequal in width to cymbium, maximum width approximately equal to width of tibia, embolus long, slender, cylindrical, gently curved and gradually tapering.

Legs: ♂: Leg I patella, ventral and lateral surfaces without spines or with few spines distally; tibia convex proximally in lateral profile. Legs I and II (fig. 23C–F) tibia and metatarsus, pro-lateral and ventral surfaces densely and evenly spinose; tarsi spines on lateral surfaces, spinules present in ventral scopulae, paired claws each with sigmoid row of well-developed teeth extending approximately two-thirds length of claw. Leg III patella, retro-lateral margin occasionally with few spines distally; tibia, retrodorsal and, in some specimens, ventral surfaces spinose; metatarsus (fig. 24A–C), ventral and lateral surfaces and distal margin with spines more robust than in *S. hewitti*, n. sp. Leg IV patella, dorsal and pro-lateral surfaces with patch of spinules extending beyond midpoint of segment; tibia, proventral surface with slender spines; metatarsus (fig. 24D–F), ventral surface with spines more robust than in *S. hewitti*, n. sp. Legs III and IV tarsi, paired claws each with two or three long teeth proximally, and smaller teeth extending more than half length of claw. ♀: Legs I and II tibia and metatarsus, retroventral spines not elongated; metatarsus, prodorsal surface with short, erect setae along entire length, retrodorsal surface with patch of spinules extending from proximal margin to beyond midpoint of segment, becoming more sparse distally. Leg IV metatarsus with preening comb, comprising four or five elongated slender spines on distal retroventral margin.

Spermathecae: Entire, with inflated terminus (fig. 4D).

ADDITIONAL MATERIAL: SOUTH AFRICA: Gauteng Prov.: Krugersdorp Distr.: Broederstroom, Farm “Kareeoorde” [ca. 1 km SW of junction of R563 and R560 at Hekpoort, 25.8561°S 27.6378°E], 15.ii.2003, A. Leroy, on soil, 1 ♂ (NCA 2005/1355); Mohales Gate, 25.93857°S

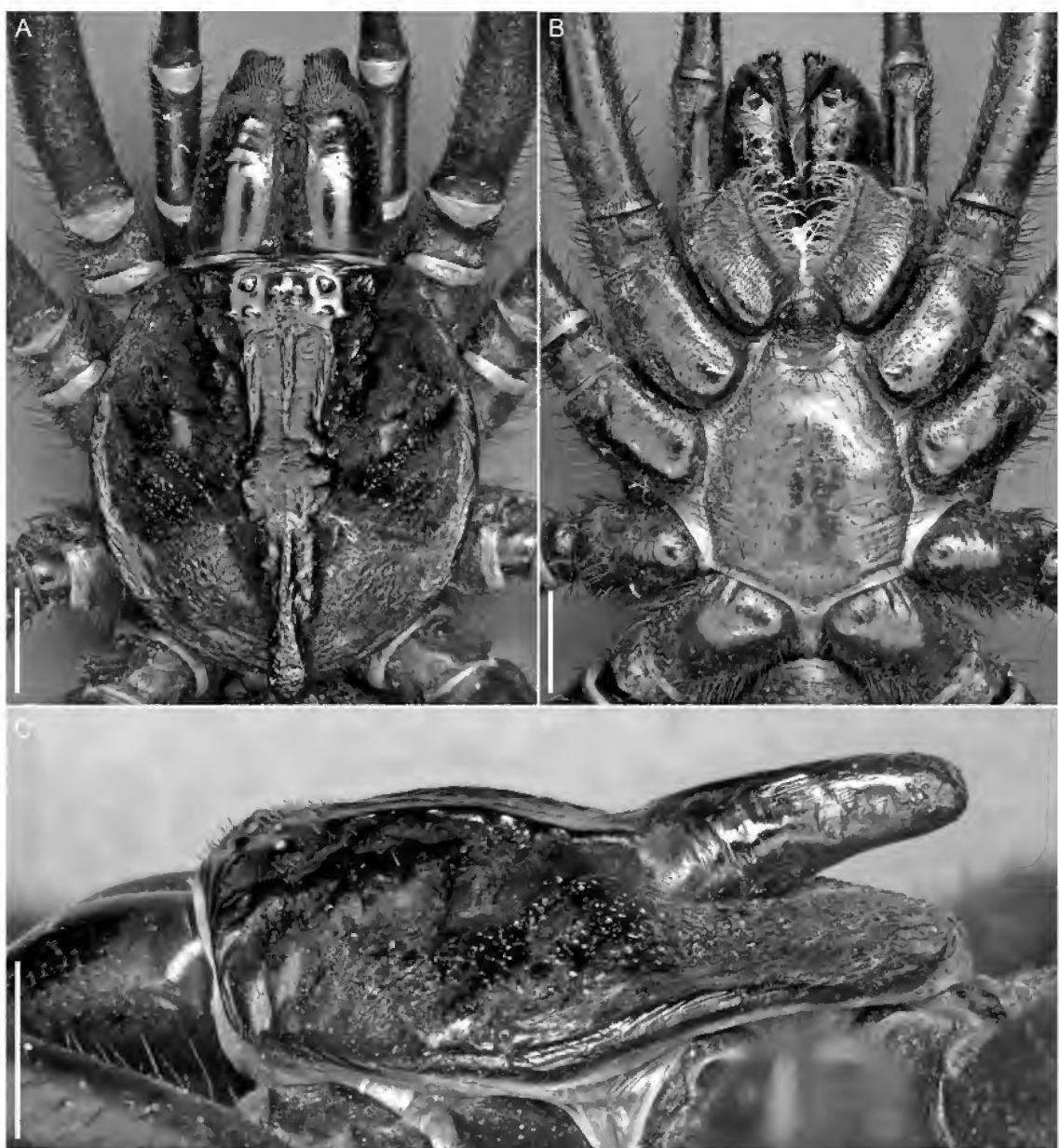


FIGURE 21. *Stasimopus filmeri*, n. sp., ♂ (TMSA 23993). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

27.63759°E, 1439 m, 25.ix.2007, P. Hawkes, 1 subad. ♀ (photograph).

DISTRIBUTION: *Stasimopus filmeri*, n. sp., appears to be restricted to the same valley as *S. griswoldi*, n. sp., between the Magaliesberg and Skurweberg mountains, west of the Crocodile River (fig. 3). However, *S. filmeri*, n. sp., occurs only on the southern side of the Magalies River. The known distribution of this species falls within the Krugersdorp District of Gauteng Province, South Africa, but the species probably occurs throughout the valley in the Gauteng and North West provinces.

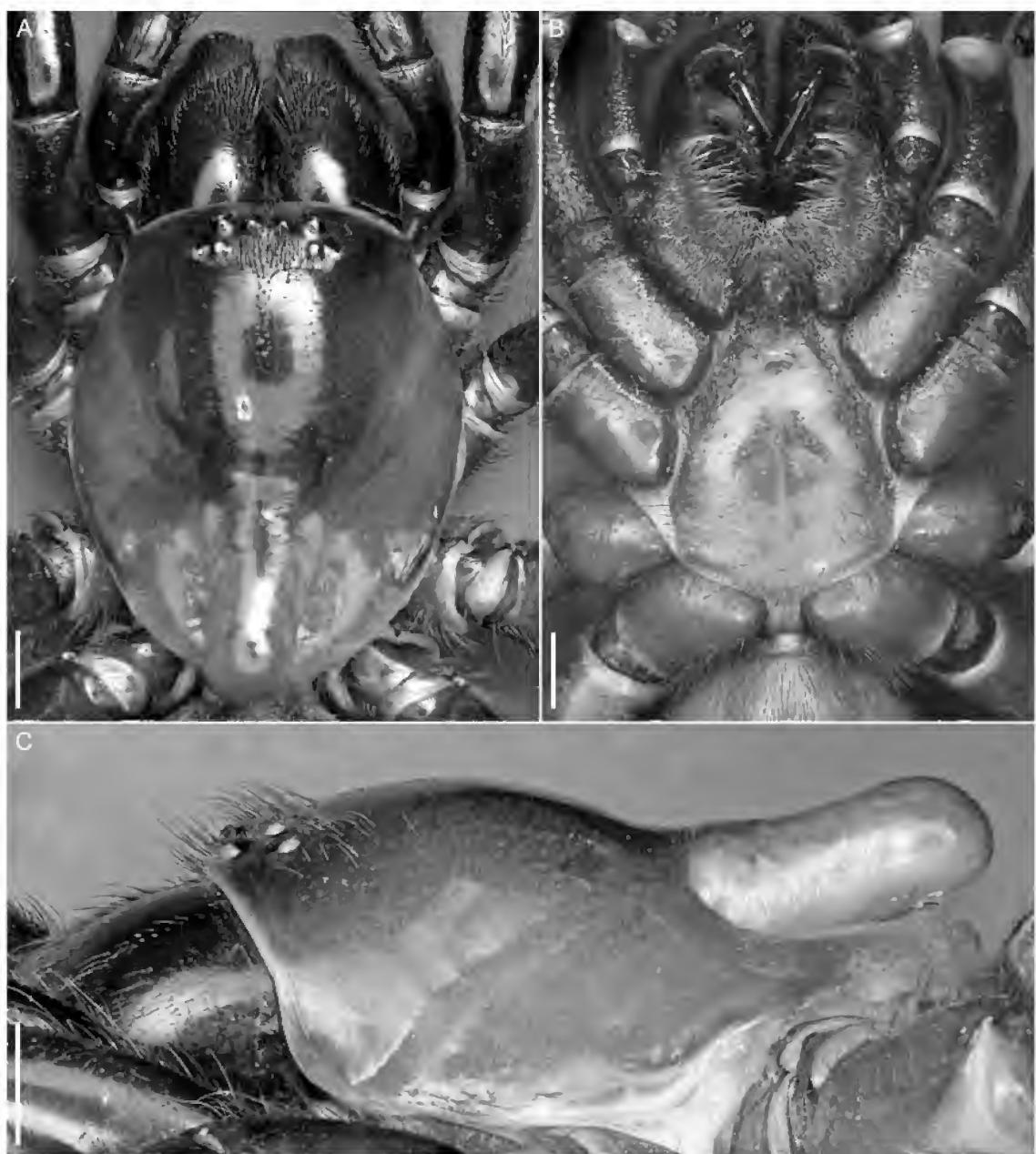


FIGURE 22. *Stasimopus filmeri*, n. sp., ♀ (TMSA 23998). A. Prosoma, dorsal aspect. B. Prosoma, ventral aspect. C. Carapace, lateral aspect. Scale: 2 mm.

HABITAT: The known locality records of this species fall within the Moot Plains Bushveld vegetation type (Mucina and Rutherford, 2006), characterized by mixed woodland with *A. karroo*, *A. nilotica*, and *R. lancea* (fig. 1D). The soils in the area are mostly red structured clays (Shortlands form) and shallow rocky soils (Glenrosa and Mispah forms) with high clay content. This species occurs on both soil types, but appears to be more abundant on the deeper soils.

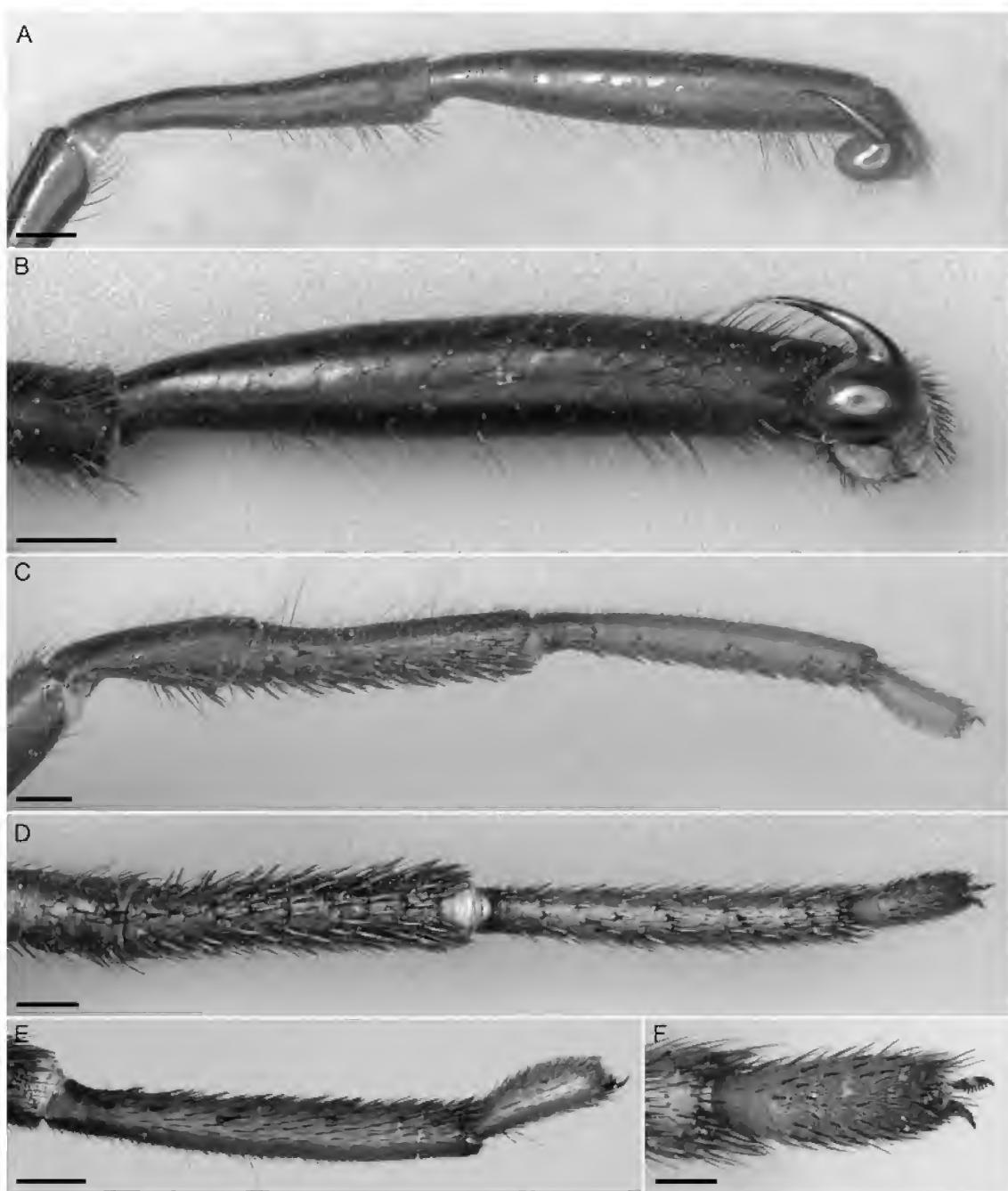


FIGURE 23. *Stasimopus filmeri*, n. sp., ♂ (TMSA 23993). A. Pedipalp patella, tibia, embolus, prolateral aspect. B. Pedipalp tibia, embolus, ventral aspect. C, D. Leg I patella, tibia, metatarsus, tarsus. C. Prolateral aspect. D. Ventral aspect. E. Leg I metatarsus, tarsus, retrolateral aspect. F. Leg I, tarsus, ventral aspect. Scale: A-E. 1 mm. F. 0.5 mm.

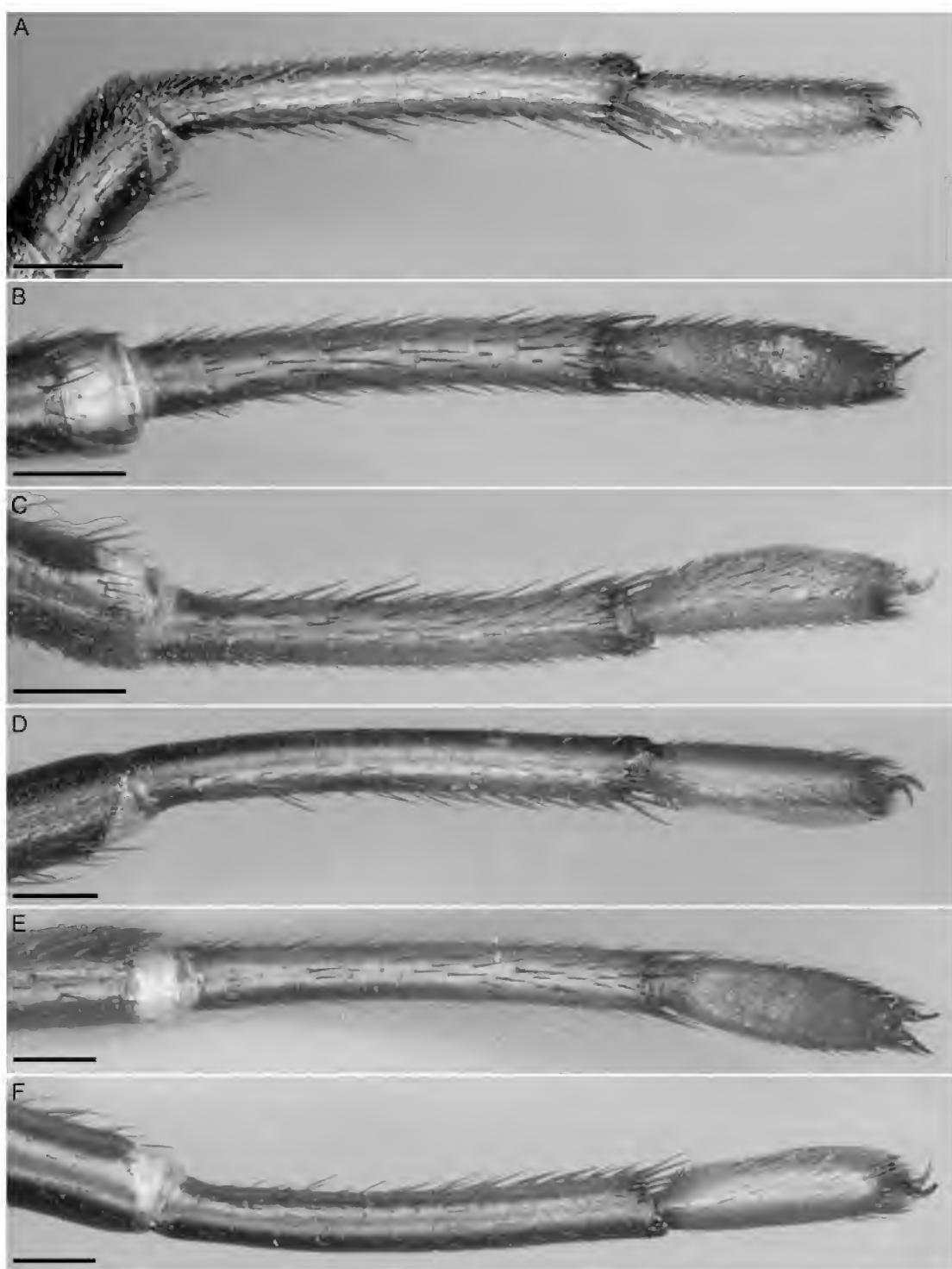


FIGURE 24. *Stasimopus filmeri*, n. sp., ♂ (TMSA 23993). A-C. Leg III metatarsus, tarsus. D-F. Leg IV metatarsus, tarsus. A, D. Prolateral aspect. B, E. Ventral aspect. C, F. Retrolateral aspect. Scale: 1 mm.

CONSERVATION STATUS: The nature and extent of the threat to this species from habitat destruction is the same as for *S. griswoldi*, n. sp.

DISCUSSION

This study highlighted several important considerations for the systematics and conservation of *Stasimopus*. Dippenaar Schoeman (2002: 31) and Hendrixson and Bond (2004: 2) suggested that a revision of *Stasimopus* would result in many new synonyms, but based on the diversity observed in Gauteng Province, we predict that most described species will prove to be valid and many new species await discovery and description.

Approximately 40% of the described species of *Stasimopus* are known only from females. However, based on examination of numerous specimens during this study, we conclude that females exhibit limited morphological variation, with few discrete qualitative characters for species delimitation, compared to adult males. The limits of species known only from females should therefore be reevaluated; some may be species complexes and others may need to be synonymized (Engelbrecht and Prendini, 2011). However, species should not be described or synonymized in the absence of adult males. The collection of adult males from the type localities of species currently known only from females should be prioritized. Different species have been found in close geographical proximity (sometimes syntopically) and the locations where types were collected is seldom precisely known. Adult males of all species occurring in the vicinity of type localities will therefore need to be collected to accurately determine the identities of species previously described from females only, and it may be necessary to undertake scanning electron micrograph analyses of fine structure (e.g. spinneret spigot morphology) or sequence DNA barcodes to associate the sexes (Prendini, 2005).

The extent of habitat transformation caused by agricultural and urban development within the known ranges of all four species discussed in the present contribution is cause for concern. *Stasimopus robertsi* may be a significant conservation priority given that it is known from only four localities within an area that has been and continues to be transformed. Further sampling for this species is a high priority to determine the extent and limits of its distribution and the threat of extinction. Extensive habitat transformation has also occurred across the known ranges of the three new species described above and appropriate measures should therefore be implemented to ensure their protection.

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fieldwork. Den and Nic McLean provided accommodation at Mokoya Lodge during surveys of the Hekpoort area. Matimba Baloyi captured the images. Alan Hall provided access to facilities at the Laboratory for Microscopy and Microanalysis of the University of Pretoria. Steve Thurston (AMNH) assisted with preparing the plates. Funds for pitfall trapping equipment were provided by the Oppenheimer family and E. Oppenheimer & Son, with the assistance of Duncan MacFadyen. Funds for other costs associated with fieldwork were provided by the Gauteng Department of Agriculture and Rural Development, Government of the Republic of South Africa. Fieldwork was funded in part by National Science Foundation grants EAR 0228699 and DEB 0228699 to the second author. Robert Raven and an anonymous reviewer provided comments on a previous draft of the manuscript.

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